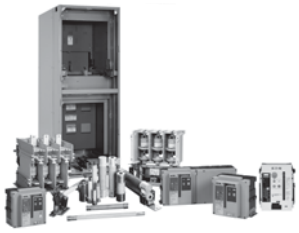
Power Breakers, Contactors and Fuses

Power Breakers, Contactors and Fuses Family



3.1 Power Circuit Breakers

Low Voltage Power Circuit Breakers V4-T3-2
Magnum DS Low Voltage Power Circuit Breakers V4-T3-6
Magnum MDSL Current Limiting Power Circuit Breaker V4-T3-12
Magnum SB Low Voltage Insulated Case Circuit Breakers V4-T3-15
Magnum IEC Rated Air Circuit Breakers V4-T3-20
Magnum DC (Direct Current) Low Voltage Switches V4-T3-30
Series NRX Low Voltage Power Circuit Breakers V4-T3-32
Medium Voltage Circuit Breakers V4-T3-39

3.2 Medium Voltage Power Contactors

Product Overview V4-T3-56
SL MV Power Contactor 7.2 kV/160–400A V4-T3-58
SL MV Power Contactor 7.2 kV/800A V4-T3-67
SL MV Power Contactor 15 kV/300A V4-T3-71

3.3 Fuses General

Product Overview V4-T3-75
Power Fuse V4-T3-75
Power vs. Distribution V4-T3-75
Low vs. Medium vs. High Voltage V4-T3-75
Expulsion vs. Current Limiting (Definitions per ANSI C47.40-1993) . . . V4-T3-76
Fuse Types V4-T3-76
General Fuse Component Terms V4-T3-76

3.4 Expulsion Fuses

Product Description V4-T3-78
Accessories V4-T3-78
Catalog Number Selection V4-T3-79
Product Selection V4-T3-80

3.5 Current Limiting Fuses

Catalog Number Selection V4-T3-99
Product Selection V4-T3-101

3

Power Circuit Breaker

Contents

Description	*Page*
Low Voltage Power Circuit Breakers Features, Benefits and Functions	**V4-T3-3**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Low Voltage Power Circuit Breakers

Product Overview

Magnum Low Voltage Power Circuit Breakers for Global Application

Magnum® low voltage power circuit breakers enable comprehensive solutions to meet and exceed the unique and wide-ranging requirements of today's global power distribution systems. This powerful circuit breaker offering is designed for ultimate custom configuration and application flexibility, with the needs of the power distribution equipment user and the electrical equipment manufacturer in mind.

Four Product Families

Magnum consists of four product families; each provides specific ratings, features and approvals to optimize performance when applied in power distribution equipment and custom enclosures.

Magnum DS Low Voltage Power Circuit Breakers for ANSI Rated Switchgear Applications

- Up to 635 Vac
- 200 to 6000A continuous
- 42 to 200 kA interrupting

Magnum DS Low Voltage Power Circuit Breaker Family ANSI Rated for Switchgear Applications

Magnum SB Low Voltage Insulated Case Circuit Breakers for Switchboard Applications

- Up to 635 Vac
- 200 to 5000A continuous
- 50 to 150 kA interrupting

Magnum SB Low Voltage Insulated Case Circuit Breaker Family UL Rated for Switchboard Applications

Magnum IEC Air Circuit Breakers for IEC Rated Switchboards

- Up to 690 Vac
- 200 to 6300A continuous
- 40 to 105 kA I_{cu}/I_{cs}

Magnum IEC Low Voltage Air Circuit Breaker Family

Magnum DC Switches for Direct Current Applications

- Up to 1000 Vdc
- 800 to 3200A continuous
- 50 to 65 kA withstand rating

Magnum DC Switch Family

Features, Benefits and Functions

- **200 kA interruption ratings** with current limiting performance and low current let-through to reduce damaging energy to downstream equipment at high fault levels
- **Withstand ratings up to 100 kA** to maximize system coordination and selectivity
- **Four physical frame sizes** (Narrow, Standard, Double Narrow and Double) to promote breaker application in compact modular enclosures and improve enclosure density
- **Continuous current ratings from 800 to 6300A** with 100% rating at 104°F (40°C) and no derating on most ratings up to 122°F (50°C)
- **Fixed breaker mounting configurations** with horizontal and optional vertical and front connected terminal connections
- **Drawout breaker mounting configurations** with cassette and optional safety shutters
- **Three- and four-pole breaker configurations**
- **Through-the-door design** for human interface with the breaker compartment door closed
- **DC rated switches** for direct current applications
- **Two-step stored energy mechanism** for manually and electrical operated breakers
- **Digitrip™ RMS Trip Unit family protection** with four models each providing increasing levels of protection and feature options for coordination, information and diagnostics:
  - Microprocessor-based rms sensing
  - Basic to programmable overcurrent protection and alarms
  - Local display for information, status and diagnostics
  - Ampere, voltage and power metering
  - Power quality, harmonics and waveform capture
  - Communications with translators to common protocols
  - Zone selective interlocking for improved coordination
  - Integral Arcflash Reduction Maintenance System™
  - Breaker health monitoring
- **Field-installable accessories** (UL® listed) common across the breaker frames and designed to be easily installed in the field to service or modify the breaker at the point of use
- **Secondary terminal contacts** mounted at the top front of the breaker and away from the primary voltage areas for improved safety and access. Finger-safe terminal blocks accommodate ring-tongue or spade type terminals as standard

Through-the-Door Design for Human Interface with the Breaker Compartment Door Closed

High Technology Microprocessor-Based Digitrip RMS 1150+ Trip Units are Available With Advanced Features Like Programmable Overcurrent Settings, Power Metering, Power Quality and Communications

Breaker Features on Front Cover

The controls and indicators are functionally grouped on the breaker faceplate to optimize the human interface, visibility and ease of use. For maximum safety, a modern, through-the-door design permits access to the breaker levering system, trip unit, controls and indicators with the door closed.

① Red Mechanical Trip Flag Pop-out Indicator (Optional)—Interlocked Indicator Requiring Manual Reset is also Available

② Accessory Viewing Windows for:

- Shunt Trip Attachment (STA)
- Spring Release Device (SR)
- Undervoltage Release (UVR) Device or Second STA

③ Digitrip RMS Trip Unit (Model 520M Shown) Protected by Clear Cover

④ Contact Status Indicators:

- OPEN—Green
- CLOSED—Red

⑤ Spring Status Indicators:

- Charged—Yellow
- Discharged—White

⑥ Push OFF (Open) Pushbutton—Red

⑦ Push ON (Close) Pushbutton—Green

⑧ Manual Spring Charging Handle for Manually Charging the Stored Energy Springs

⑨ Mechanical Operations Counter (Optional)

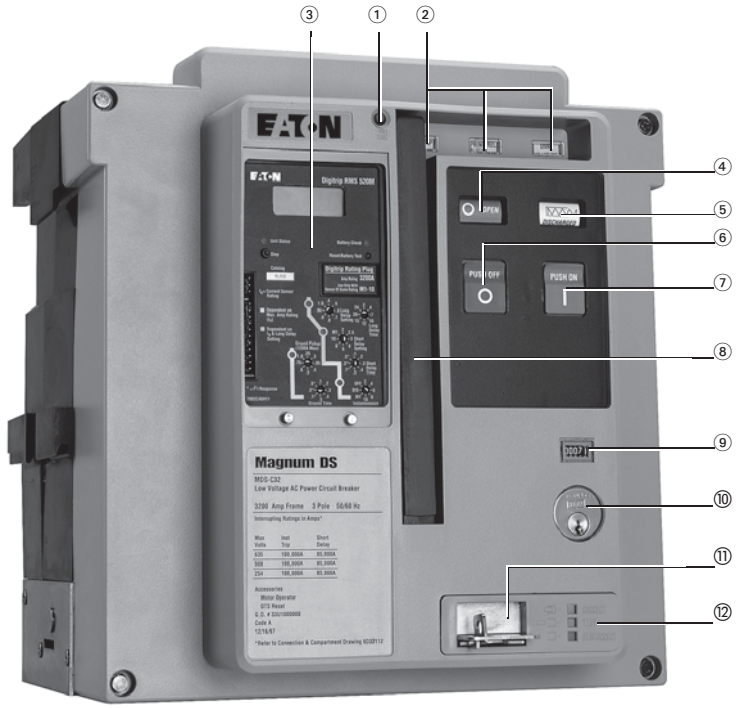
⑩ Key Off Lock (Optional)

⑪ Padlockable Levering Device Shutter for Drawout Breakers

⑫ Color-Coded Position Indicator for Drawout Breakers:

- CONNECT—Red
- TEST—Yellow
- DISCONNECT—Green

Magnum DS Drawout Breaker



Accessory Viewing Windows Visibly Confirm the Breaker Shunt Trip, Spring Release, and UVR Installation and Their Control Voltage Rating

Through-the-Door Design for Human Interface with the Breaker Compartment Door Closed, for Example, Manually Charging the Stored Energy Springs

Drawout Breaker Levering Can be Accomplished With the Compartment Door Closed Without the Need for a Special Levering Tool

Breaker Internal Features

Magnum is designed for ease of access for inspection, modification and maintenance at the point of use. The breaker front cover is easily removed with four captive bolts, revealing the modular internal breaker features.

① Secondary Terminal Points for Internal Breaker Wiring Connections

② Breaker Accessory Mounting Deck with Three Positions for Mounting:

- Shunt Trip Attachment (STA)
- Spring Release Device (SR)
- Undervoltage Release (UVR) Device or Second STA

③ Digitrip RMS Trip Unit (Model 1150+ Shown)

④ Spring Charging Motor (Optional) for Electrically Charging the Stored Energy Springs

⑤ Manual Spring Charging Handle for Manually Charging the Stored Energy Springs

⑥ Padlockable Levering Device Shutter for Drawout Breakers

⑦ Color-Coded Position Indicator for Drawout Breakers:

- CONNECT—Red
- TEST—Yellow
- DISCONNECT—Green

⑧ Secondary Contact Blocks for Connection to External Cell Control Wiring

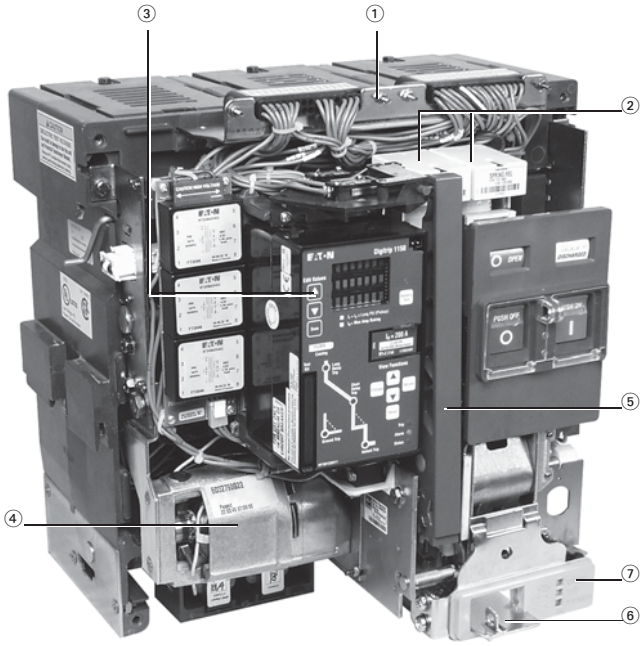
⑨ Removable Arc Chute Covers for Easy Access to Breaker Main Contacts

⑩ Primary Finger Cluster Disconnecting Contacts for Drawout Breaker are Mounted on the Breaker Element (Not in the Breaker Compartment) for Ease of Access for Inspection and Maintenance

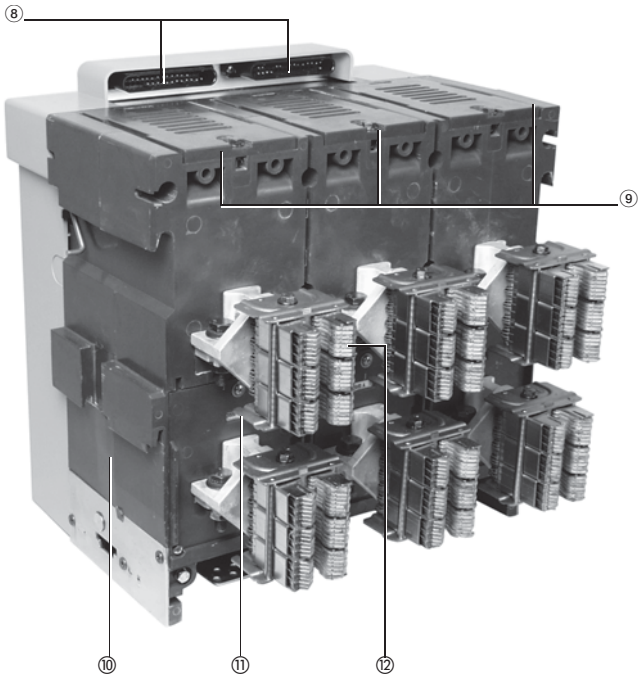
Note: Some competitors mount the primary finger clusters inside the cell, requiring shutdown of the switchgear for inspection and maintenance.

⑪ Current Sensor Viewing Windows to View and Confirm Breaker Sensor Rating

⑫ Rigid Frame Housing (Thermoset Composite Resin) Providing Increased Strength and Durability



Magnum Drawout Breaker Front View With Front Cover Removed Showing Easy Access to the Breaker Internal Devices



Magnum Drawout Breaker Rear View Showing Primary Disconnecting Finger Clusters Mounted on the Breaker for Ease of Inspection

Magnum DS, MDSX and MDSL Circuit Breakers

Contents

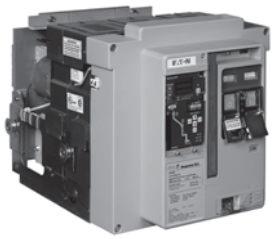
Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	
Catalog Number Selection	**V4-T3-7**
Technical Data and Specifications	**V4-T3-10**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Magnum DS Low Voltage Power Circuit Breakers

Product Description

Magnum DS is a true UL 1066 listed low voltage power circuit breaker family, designed for the highest performance requirements of switchgear and specialty enclosure applications.

- Magnum DS low voltage power circuit breakers have interruption ratings up to 200 kA at 480 Vac, and short-time withstand ratings up to 100 kA at 635 Vac with continuous current ratings up to 6000A to maximize system coordination and selectivity
- Magnum MDSX current limiting power circuit breakers have 200 kA interruption ratings at 480 Vac with continuous current ratings up to 5000A
- Magnum MDSL current limiting power circuit breakers have 200 kA interruption ratings at 600 Vac with continuous current ratings up to 2000A



The Magnum MDSL current limiting power circuit breakers have integral current limiters to provide interruption ratings of 200 kA at 600 Vac.

The Magnum MDSX current limiting power circuit breakers have fast opening contacts to provide interruption ratings up to 200 kA at 480 Vac without fuses.

Standards and Certifications

UL and ANSI Test Certifications

Magnum DS meets or exceeds the applicable ANSI, NEMA®, UL and CSA® standards, including:

- ANSI C37.13 (Low Voltage AC Power Circuit Breakers Used in Enclosures)
- ANSI C37.16 (Preferred Ratings, Related Requirements, and Application Recommendations for Low Voltage Power Circuit Breakers and AC Power Circuit Breakers)
- ANSI C37.17 (Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers)
- ANSI C37.50 (Test Procedures for Low Voltage AC Power Circuit Breakers Used in Enclosures)
- UL 1066 (Standard for Low Voltage AC and DC Power Circuit Breakers Used in Enclosures)
- NEMA SG3 (This standard adopts ANSI C37.16 in its entirety)

Comprehensive Enclosure Solutions

Magnum DS has proven performance in Eaton manufactured switchgear with the following test certifications:

- UL 1558 (Certified Magnum DS Low Voltage Metal-Enclosed Switchgear)
- UL 1008 Standard for Transfer Switch Equipment
- UL, CSA 22.2.31 Low Voltage Assemblies

Approvals and Marks

- UL listed: Magnum DS Breaker UL File No. E52096 and Cassette UL File No. E204565
- ABS (American Bureau of Shipping) Type Listed Certificate Number 04-HS422844A-DUB
- Additional Magnum DS approvals and certificates can be found on www.eaton.com

Listed

Product Selection

Contact Eaton for pricing.

Catalog Number Selection

Magnum DS ANSI Breaker Product Family

MD S 4 12 3 V E A 06 MU

Breaker Type
- **MD** = Magnum DS
- **SB** = Magnum switchboard

Frame Type
- **S** = Standard or double
- **N** = Narrow
- **D** = MDDX only
- **E** = High endurance

Interrupting/ Withstand Rating
- **4** = 42
- **5** = 50
- **6** = 65
- **8** = 85
- **C** = 100
- **H** = 130 (DSH)
- **E** = 150 (DSE)
- **X** = 200 (DSX/DDX)
- **L** = 200 (DSL)

Continuous Amperes and Phasing (Facing Front of Breaker)
- **08** = 800 ABC
- **12** = 1200 ABC
- **16** = 1600 ABC
- **20** = 2000 ABC
- **25** = 2500 ABC
- **30** = 3000 ABC
- **32** = 3200 ABC or ABCABC
- **3N** = 3200 AABBCC
- **4N** = 4000 AABBCC
- **5N** = 5000 AABBCC
- **6N** = 6000 AABBCC
- **40** = 4000 ABCABC
- **50** = 5000 ABCABC
- **60** = 6000 ABCABC

Mounting Configuration and Load Terminals
- **H** = Fixed horizontal
- **V** = Fixed vertical
- **L** = Drawout (MDN)
- **W** = Drawout (MDS)

Poles and Neutral (Facing Front of Breaker)
- **3** = Three
- **4** = Four (neutral left)

Nameplate Language
- **E** = English
- **A** = Spanish

Current Limiter Selection
- **A** = Non-DSL (no limiter)
- **D** = MA250
- **E** = MA300
- **F** = MA400
- **G** = MA600
- **H** = MA800
- **K** = MB1200
- **L** = MB1600
- **M** = MB2000
- **N** = MD2500
- **P** = MD3000

Sensor and Rating Plug Rating

NN = None	
01 = 100	**13** = 1250
02 = 200	**16** = 1600
05 = 250	**20** = 2000
03 = 300	**25** = 2500
04 = 400	**30** = 3000
06 = 600	**32** = 3200
08 = 800	**40** = 4000
10 = 1000	**50** = 5000
12 = 1200	**60** = 6000

Trip Unit and Protection, and External Control Voltage When Required
- **NN** = Non-automatic (no trip unit)
- **22** = 220 + LI
- **52** = 520 LSI
- **5G** = 520 LSIG
- **M2** = 520M LSI
- **MT** = 520M LSI (24/48 Vdc)
- **MU** = 520M LSI (120 Vac)
- **MV** = 520M LSI (240 Vac)
- **MQ** = 520M LSI (125 Vdc)
- **MG** = 520M LSIG
- **MH** = 520M LSIG (24/48 Vdc)
- **MM** = 520M LSIG (120 Vac)
- **MN** = 520 LSIG (240 Vac)
- **MX** = 520M LSIG (125 Vdc)
- **ME** = 520M LSIA (24/48 Vdc)
- **MC** = 520 LSIA (120 Vac)
- **MF** = 520M LSIA (240 Vac)
- **MZ** = 520M LSIA (125 Vdc)
- **CT** = 520MC LSI (24/48 Vdc)
- **CU** = 520MC LSI (120 Vac)
- **CV** = 520MC LSI (240 Vac)
- **CQ** = 520MC LSI (125 Vdc)
- **CH** = 520MC LSIG (24/48 Vdc)
- **CM** = 520MC LSIG (120 Vac)
- **CN** = 520MC LSIG (240 Vac)
- **CX** = 520MC LSIG (125 Vdc)
- **CE** = 520MC LSIA (24/48 Vdc)
- **CC** = 520MC LSIA (120 Vac)
- **CF** = 520MC LSIA (240 Vac)
- **CY** = 520MC LSIA (125 Vdc)
- **1A** = 1150 LSI (24/48 Vdc)
- **1C** = 1150 LSI (120 Vac)
- **1E** = 1150 LSI (240 Vac)
- **1Q** = 1150 LSI (125 Vdc)
- **1F** = 1150 LSIG (24/48 Vdc)
- **1G** = 1150 LSIG (120 Vac)
- **1H** = 1150 LSIG (240 Vac)
- **1X** = 1150 LSIG (125 Vdc)
- **1J** = 1150 LSIA (24/48 Vdc)
- **1K** = 1150 LSIA (120 Vac)
- **1M** = 1150 LSIA (240 Vac)
- **1Y** = 1150 LSIA (125 Vdc)

Magnum DS ANSI Breaker Product Family, continued

A W C H N E H K L A X

Shunt Trip (ST)
N = None
A = 110–127 Vac/Vdc
R = 208–240 Vac/Vdc
C = 24 Vdc
H = 48 Vdc
B = 110–127 Vac/Vdc (100% duty)
S = 220–250 Vac/Vdc (100% duty)
D = 24 Vdc (100% duty)
K = 48 Vdc (100% duty)
J = 60 Vdc (100% duty)
6 = 60 Vdc

Motor Operator
M = Manual operated
N = 110–125 Vac (5-sec)
W = 110–125 Vdc (5-sec)
T = 220–250 Vdc (5-sec)
P = 220–240 Vac (5-sec)
L = 24 Vdc (5-sec)
K = 48 Vdc (5-sec)
S = 60 Vdc (5-sec)
1 = 110–125 Vac (3-sec)
2 = 220–250 Vac (3-sec)
4 = 24 Vdc (3-sec)
8 = 48 Vdc (3-sec)
5 = 110–125 Vdc (3-sec)
9 = 220–250 Vdc (3-sec)

Spring Release Device (SRD)
N = None
A = 110–127 Vac/Vdc
R = 208–240 Vac/Vdc
C = 24 Vdc
H = 48 Vdc
S = 60 Vdc

Undervoltage Release (UVR) or 2nd Shunt Trip (ST)
N = None
A = UVR (110–127 Vac)
R = UVR (208–240 Vac)
C = UVR (24 Vdc)
H = UVR (48 Vdc)
D = UVR (60 Vdc)
E = UVR (110–125 Vdc)
F = UVR (220–250 Vdc)
G = UVR (32 Vdc)
X = UVR (380–415 Vac)
J = UVR (480 Vac)
K = UVR (600 Vac)
1 = 2nd ST (110–127 Vac/Vdc)
2 = 2nd ST (208–250 Vac/Vdc)
3 = 2nd ST (24 Vdc)
4 = 2nd ST (48 Vdc)
6 = 2nd ST (60 Vdc)
B = 2nd ST (110–127 Vac/Vdc 100% duty)
O = 2nd ST (220–250 Vac/Vdc 100% duty)
I = 2nd ST (24 Vdc 100% duty)
Q = 2nd ST (48 Vdc 100% duty)
9 = 2nd ST (60 Vdc 100% duty)

Auxiliary Switch
N = None
2 = 2A/2B
4 = 4A/4B
6 = 6A/6B

Bell Alarms Switch (OTS) with 2a/2b Contacts and/or Mechanical Trip Indicator

	Mech. Trip Indicator	Mech. Interlock for Manual Reset	OTS Switch with Two Form C Contacts
E =	No	—	No
N =	Yes	No	No
Y =	Yes	No	Yes
M =	Yes	Yes	No
L =	Yes	Yes	Yes
F =	Yes	No	Yes with 24V reset
G =	Yes	No	Yes with 120V reset
H =	Yes	No	Yes with 240V reset
I =	Yes	Yes	Yes with 24V reset
J =	Yes	Yes	Yes with 120V reset
K =	Yes	Yes	Yes with 240V reset

Padlock Provisions for Blocking Close and/or Open ACB Manual Pushbuttons
N = None
M = Metal (block close and open)
P = Plastic (block close and open)
C = Metal (block close only)
H = Plastic (block close only)
S = Metal swbd lock-off (block close, depress open)

Operations Counter and/or Keylock Provisions

	Counter	Keylock Provisions
N =	No counter	No locks
K =	No counter	Kirk lock
C =	No counter	Castell lock
R =	No counter	Ronis lock
S =	No counter	CES lock
A =	Counter	No lock
Y =	Counter	Kirk lock
L =	Counter	Castell lock
H =	Counter	Ronis lock indicator
E =	Counter	CES lock

Latch Check Switch/Trip Unit Metering Voltage Connection for Digitrip 1150 Trip Unit

	Latch Check Switch	1150 Voltage Connection
N =	None	Upper terminals
M =	None	Lower terminals
L =	LCS wired to SRD	Upper terminals
Y =	LCS Wired to SRD	Lower terminals
C =	LCS Wired External	Upper terminals
D =	LCS Wired External	Lower terminals

Breaker Shipping Options and Instructions
A = Fixed breaker alone with door kit
F = Fixed breaker alone without door kit
A = Drawout breaker alone without door frame kit
C = Drawout breaker in cassette (un-wired)
P = Drawout breaker in cassette (shutters)
S = Drawout breaker in cassette (shutters)
W = Drawout breaker in cassette (pre-wired and shutters)
Double frame drawout breakers ship without cassette drawout. ACBs ship in narrow and universal cassettes only.

Frame Use
X = All breakers

Cassette Magnum DS ANSI Breaker Product Family

M E 32 3 C A DN N NNN W C

Cassette Family
- **M** = Standard or double frame
- **L** = Narrow frame
- **S** = SB standard or double frame
- **T** = SB narrow frame

Future Use
- **E** = SB cassette (150 kAIC)
- **N** = Cassettes (up to 100 kA)
- **L** = MDSL cassettes (200 kA)
- **X** = MDSX cassettes (200 kA)

Continuous Amperes
- **16** = Up to 1600A
- **20** = Up to 2000A
- **32** = 2500 to 3200A
- **40** = 4000 to 1600A
- **50** = 5000 to 2000A

Poles
- **3** = Three-pole
- **4** = Four-pole

Cassette Frame and Rear Terminals
- **P** = Basic cassette (without vertical bus stabs)
- **C** = Basic cassette with stabs (with vertical bus stab kit)
- **H** = Narrow frame cassette (with horizontal terminal pads)
- **U** = Universal cassette (with universal terminal pads)

Arc Hood
- **A** = Arc hood installed

Door Frame and Gasket Kit
- **DN** = Door frame and gasket kit included
- **XN** = Door frame and gasket kit not included

Shutters
- **N** = No shutters
- **S** = Shutters installed

Future Use
- **NNN** = All cassettes

Cassette Wiring
- **N** = Un-wired
- **W** = Cassette wired

Cassette Shipping
- **C** = Cassette only
- **B** = Breaker shipped in cassette

Technical Data and Specifications

Magnum DS Switchgear Class UL 1066 Low Voltage Power Circuit Breakers

Frame Amperes	Breaker Type Catalog Position 1–6	Frame Type	rms Symmetrical Current Ratings kA 50/60 Hz ① Interruption Rating at 254 Vac	Interruption Rating at 508 Vac	Interruption Rating at 635 Vac	Short-Time Withstand Rating	Fixed Internal Instantaneous Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)
800	MDN-408	Narrow	42	42	42	42	—	200, 250, 300, 400, 600, 800
	MDN-508	Narrow	50	50	50	50	—	
	MDN-608	Narrow	65	65	65	65	—	
	MDN-C08	Narrow	100	100	65	20	18 x I_n	
	MDS-408	Standard	42	42	42	42	—	
	MDS-508	Standard	50	50	50	50	—	
	MDS-608	Standard	65	65	65	65	—	
	MDS-808	Standard	85	85	85	85	—	
	MDS-C08	Standard	100	100	100	85	85	
	MDS-H08	Standard	130	130	130	85	85	
	MDS-L08 ②	Standard	200	200	200	—	—	
	MDS-X08 ③	Standard	200	200	65	30	30	
1200	MDN-412	Narrow	42	42	42	42	—	200, 250, 300, 400, 600, 800, 1000, 1200
	MDN-512	Narrow	50	50	50	50	—	
	MDN-612	Narrow	65	65	65	65	—	
	MDN-C12	Narrow	100	100	65	25	18 x I_n	
	MDS-X12	Standard	200	200	65	30	30	
	MDS-512	Standard	50	50	50	50	—	
	MDS-612	Standard	65	65	65	65	—	
	MDS-812	Standard	85	85	85	85	—	
	MDS-C12	Standard	100	100	100	85	—	
	MDS-H12	Standard	130	130	130	85	85	
1600	MDN-416	Narrow	42	42	42	42	—	200, 250, 300, 400, 600, 800, 1000, 1200, 1600
	MDN-516	Narrow	50	50	50	50	—	
	MDN-616	Narrow	65	65	65	65	—	
	MDN-C16	Narrow	100	100	65	30	18 x I_n	
	MDS-516	Standard	50	50	50	50	—	
	MDS-616	Standard	65	65	65	65	—	
	MDS-816	Standard	85	85	85	85	—	
	MDS-C16	Standard	100	100	100	85	85	
	MDS-H16	Standard	130	130	130	85	85	
	MDS-L16 ②	Standard	200	200	200	—	—	
	MDS-X16 ③	Standard	200	200	65	30	30	
2000	MDN-620	Narrow	65	65	65	65	—	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000
	MDN-C20	Narrow	100	100	65	35	18 x I_n	
	MDS-620	Standard	65	65	65	65	—	
	MDS-820	Standard	85	85	85	85	—	
	MDS-C20	Standard	100	100	100	85	85	
	MDS-H20	Standard	130	130	130	85	85	
	MDS-L20 ②	Standard	200	200	200	—	—	
	MDS-X20 ③	Standard	200	200	65	30	30	

Notes

① Interrupting ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short-time withstand rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short-time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Magnum MDSL current limiting power circuit breaker with integral current limiters. Current Limiter selected determines short-time and fixed instantaneous trip rating. Maximum voltage rating is 600 Vac.

③ Magnum MDSX current limiting power circuit breaker with fast opening contacts.

Magnum DS Switchgear Class UL 1066 Low Voltage Power Circuit Breakers, continued

			rms Symmetrical Current Ratings kA 50/60 Hz ①					
Frame Amperes	**Breaker Type Catalog Position 1–6**	**Frame Type**	**Interruption Rating at 254 Vac**	**Interruption Rating at 508 Vac**	**Interruption Rating at 635 Vac**	**Short-Time Withstand Rating**	**Fixed Internal Instantaneous Trip**	**Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)**
2500	MDS-625	Standard	65	65	65	65	—	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000, 2500
	MDS-825	Standard	85	85	85	85	—	
	MDS-C25	Standard	100	100	100	100 ②	85	
	MDS-H25	Standard	130	130	130	85	85	
3200	MDS-632	Standard	65	65	65	65	—	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 3200
	MDS-832	Standard	85	85	85	85	—	
	MDS-C32	Standard	100	100	100	85	85	
	MDS-H32	Standard	130	130	130	85	85	
	MDS-X32 ③	Double	200	200	④	50	50	
4000	MDN-640	Double narrow	65	65	65	65	—	2000, 2500, 3200, 4000
	MDN-840	Double narrow	85	85	65	85	—	
	MDN-C40	Double narrow	100	100	65	100	—	
	MDS-840	Double	85	85	85	85	—	
	MDS-C40	Double	100	100	100	100	—	
	MDS-H40	Double	130	130	130	130	—	
	MDS-X40 ③	Double	200	200	⑤	50	50	
	MDD-X40	Double	200	200	100	100	—	
5000	MDS-850	Double	85	85	85	85	—	2500, 3200, 4000, 5000
	MDS-C50	Double	100	100	100	100	—	
	MDS-H50	Double	130	130	130	130	—	
	MDS-X50 ③⑤	Double	200	200	④	50	50	
	MDD-X50	Double	200	200	100	100	—	
6000	MDS-C60 ⑤	Double	100	100	100	100	—	3200, 4000, 5000, 6000
	MDS-H60 ⑤	Double	130	130	130	130	—	
	MDD-X60 ⑤	Double	200	200	100	100	—	2500, 3200, 4000, 5000

Notes

① Interruption ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short-time withstand rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short-time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

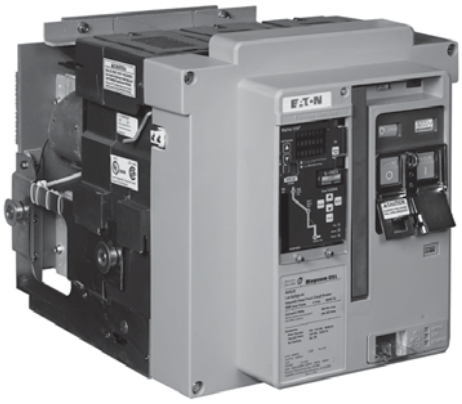
② Short-time withstand for MDSC at 2500A for 600 Vac is 85 kA.

③ Magnum MDSX current limiting power circuit breaker with fast opening contacts.

④ Product to be tested. Contact Eaton for product rating.

⑤ Breaker applied in a tested fan-cooled enclosure.

Magnum MDSL Current Limiting Power Circuit Breaker



Contents

Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	
Product Selection	**V4-T3-13**
Technical Data and Specifications	**V4-T3-13**
Trip Curve Charts	**V4-T3-14**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Magnum MDSL Current Limiting Power Circuit Breaker

Product Description

The following curves illustrate the ratings, melting time-current characteristics and current limiting, or let-through characteristics, of limiters for Magnum low voltage power circuit breakers.

The let-through current for a given limiter application is readily determined by extending a vertical line from the applicable maximum available symmetrical fault amperes at the bottom margin to the characteristic line for the particular limiter, and from this intersection extending a horizontal line to the left margin and reading the peak current. The withstand rating of any circuit elements protected by the limiters should be at least equal to this peak current.

It will be noted that the let-through current increases with the limiter size or ampere rating; in other words, the maximum current limiting effect is obtained with the smallest size. This effect is to be expected, since the resistance decreases as the rating increases. If the vertical line from the bottom margin as described in the previous paragraph does not intersect the limiter characteristic line, the available system fault current is below the "threshold" current of that limiter, and it will offer no current limiting effect.

The current limiting principle is illustrated below:

I_a= The Available Peak Fault Current

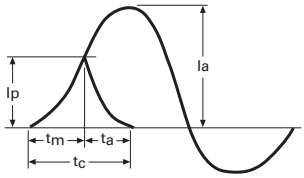
t_m=The Melting Time

I_p= The Peak Let-Through Current

t_a= The Arcing Time

t_c= The Total Interrupting (Clearing)Time

Current Limiting



Limiter Selection

The selection of a suitable limiter rating for a given application is generally governed by a choice of the following types of protection:

A. Maximum protection of "downstream" components. Type MDSL breakers are often used for this purpose even when the maximum available fault currents are within the interruption rating of the corresponding unfused Magnum breakers.

B. Protection of the circuit breaker only.

Case A would tend to use the smallest available limiter; Case B the largest. When downstream protection is required, the selection is usually a compromise, since certain small limiters cannot be coordinated with the breaker to avoid nuisance blowing on overloads or small and moderate short circuits.

Minimum, recommended and maximum limiter sizes for Magnum MDSL breakers are given in the table on **Page V4-T3-13**.

Product Selection

Magnum MDSL Sensor/Rating Plug vs. Current Limiter Selection ①

Sensor and Rating Plug I_n	MDSL Current Limiter Selection Chart ②									
200	MA250	MA300	MA400	MA600 ③	MA800	MB1200	MB1600	MB2000	MD2500	MD3000
250			MA400	MA600	MA800 ③	MB1200	MB1600	MB2000	MD2500	MD3000
300			MA400	MA600	MA800 ③	MB1200	MB1600	MB2000	MD2500	MD3000
400				MA600	MA800	MB1200 ③	MB1600	MB2000	MD2500	MD3000
600					MA800	MB1200	MB1600	MB2000 ③	MD2500	MD3000
800						MB1200	MB1600	MB2000	MD2500 ③	MD3000
1000							MB1600	MB2000	MD2500 ③	MD3000
1200								MB2000	MD2500 ③	MD3000
1600										MD3000 ③
2000										MD3000 ③

Technical Data and Specifications

Magnum MDSL Ratings

Frame	Catalog Number	Available Sensor/ Rating Plug (Amperes)
800	**MDSL08**	200, 250, 300, 400, 600, 800
1600	**MDSL16**	200, 250, 300, 400, 600, 800, 1000, 1200, 1600
2000	**MDSC20**	1600, 2000

Notes

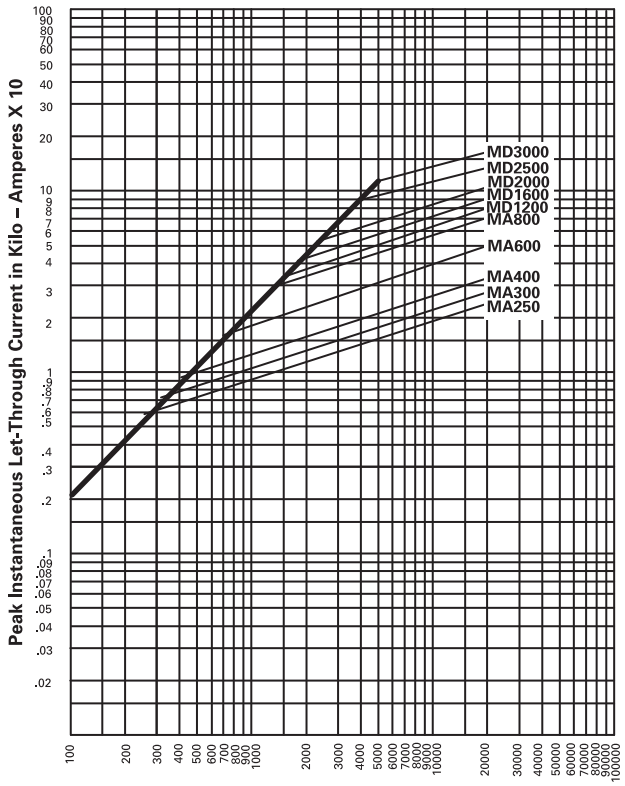
① Select the current limiter based on the Magnum breaker frame and current sensor and rating plug as shown.

② Refer to MDSL current limiter curves for let-through and time characteristics.

③ The recommended ratings shown as shaded provide for reduced current let-through and breaker coordination within the trip unit settings. Selection of current limiters below the recommended ratings shown provides lower current let-through, however, trip unit settings must be considered to avoid nuisance operation.

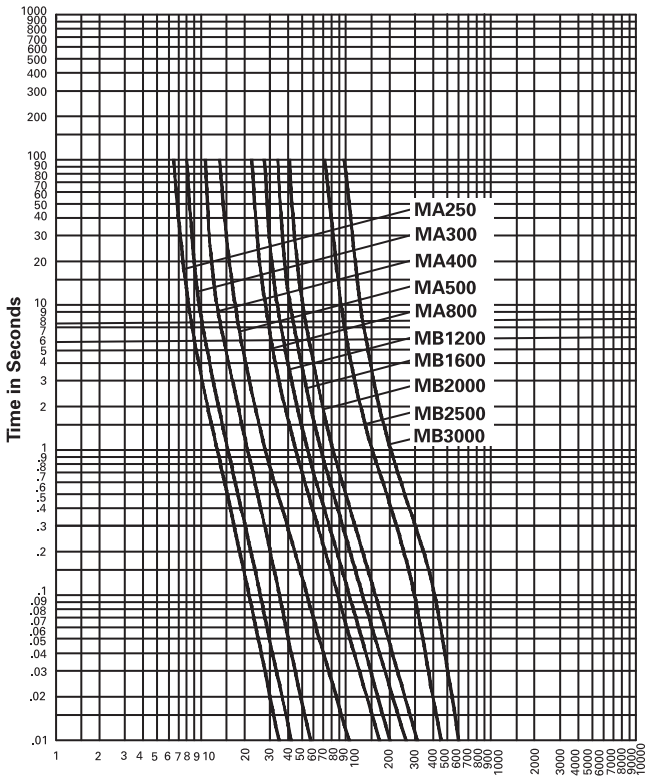
Trip Curve Charts

Type Magnum DSL Limiters, Peak Let-Through Current Characteristics



Available Current, rms Symmetrical Amperes x 10

Type Magnum DSL Limiters Average Melting Time-Current Characteristics



Scale x 100 = Current in Amperes

Note

For Time/Current Curves, see www.eaton.com/electrical

Magnum SB Low Voltage Insulated Case Circuit Breaker

Contents

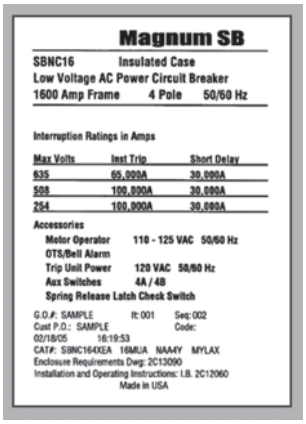
Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	
Technical Data and Specifications	**V4-T3-16**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Magnum SB Low Voltage Insulated Case Circuit Breakers

Product Description

Magnum SB is a low voltage insulated case circuit breaker family designed for the performance and economic requirements of UL 891 switchboards.

- Magnum SB insulated case circuit breakers have interruption ratings up to 130 kA at 635 Vac with continuous current ratings up to 5000A
- Magnum SB insulated case circuit breakers have lighter-duty short-time withstand ratings and fixed internal instantaneous trips on most ratings, which is characteristic of UL 489 molded case breakers commonly used in UL 891 switchboards. This provides for greater economy and excellent coordination and selectivity for most commercial applications
- Fixed internal instantaneous trips will be phased in on all Magnum SB insulated case circuit breakers rated 3200A and below to provide an extra safety factor by reducing the energy let-through to downstream circuits at the maximum instantaneous trip point and to facilitate feeder circuit breaker protection in UL 891 switchboards with 3-cycle bus bracing
- Magnum SBSE current limiting power circuit breakers have 150 kA interruption ratings at 480 Vac with continuous current ratings up to 5000A. The short-time withstand rating is 30 kA for standard frame and 50 kA for double frame breakers


Magnum SB
SBNC16 Insulated Case
Low Voltage AC Power Circuit Breaker
1600 Amp Frame 4 Pole 50/60 Hz
Interruption Ratings in Amps
Max Volts Inst Trip Short Delay
635 65,000A 30,000A
508 100,000A 30,000A
254 100,000A 30,000A
Accessories
Motor Operator 110 - 125 VAC 50/60 Hz
OTS/Bell Alarm
Trip Unit Power 120 VAC 50/60 Hz
Aux Switches 4A / 4B
Spring Release Latch Check Switch
G.O.#: SAMPLE It: 001 Seq: 002
Cust P.O.: SAMPLE Code:
02/18/05 16:19:53
CAT#: SBNC164XEA 16MUA NAA4Y MYLAX
Enclosure Requirements Dwg: 2C13090
Installation and Operating Instructions: I.B. 2C12060
Made in USA

Typical Magnum SB Low Voltage Insulated Case Circuit Breaker Nameplate

Standards and Certifications

UL and ANSI Test Certifications

Magnum SB meets or exceeds the applicable ANSI, NEMA, UL and CSA standards, including:

- ANSI C37.13 (Low Voltage AC Power Circuit Breakers Used in Enclosures)
- ANSI C37.16 (Preferred Ratings, Related Requirements, and Application Recommendations for Low Voltage Power Circuit Breakers and AC Power Circuit Breakers)
- ANSI C37.17 (Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers)
- ANSI C37.50 (Test Procedures for Low Voltage AC Power Circuit Breakers Used in Enclosures)
- UL 1066 (Standard for Low Voltage AC and DC Power Circuit Breakers Used in Enclosures)
- NEMA SG3 (This standard adopts ANSI C37.16 in its entirety)

Comprehensive Enclosure Solutions

Magnum SB has proven performance in Eaton manufactured switchboards with the following test certifications:

- UL 891 (Certified Pow-R-Line C Low Voltage Switchboards)
- UL, CSA 22.2.31 Low Voltage Assemblies

Approvals and Marks

UL listed: Magnum DS Breaker UL File E52096 and Cassette UL File E204565

Product Selection

Contact Eaton for pricing.

Technical Data and Specifications

Magnum SB Switchboard Class Insulated Case Low Voltage Air Circuit Breakers

			rms Symmetrical Current Ratings kA 50/60 Hz ①					
Frame Amperes	**Breaker Type Catalog Position 1–6**	**Frame Type**	**Interruption Rating at 254 Vac**	**Interruption Rating at 508 Vac**	**Interruption Rating at 635 Vac**	**Short-Time Withstand Rating**	**Fixed Internal Instantaneous Trip**	**Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)**
800	SBN-508	Narrow	50	50	35	20	18 x I_n	200, 250, 300, 400, 600, 800
	SBN-608	Narrow	65	65	42	20	18 x I_n	
	SBN-C08	Narrow	100	100	65	20	18 x I_n	
	SBS-608	Standard	65	65	65	20	18 x I_n	
	SBS-808	Standard	85	85	85	20	18 x I_n	
	SBS-C08	Standard	100	100	85	20	18 x I_n	
	SBS-H08	Standard	130	130	130	20	18 x I_n	
	SBS-E08 ②③	Standard	200	150	65	30	30	
1200	SBN-512	Narrow	50	50	35	25	18 x I_n	200, 250, 300, 400, 600, 800, 1000, 1200
	SBN-612	Narrow	65	65	42	25	18 x I_n	
	SBN-C12	Narrow	100	100	65	25	18 x I_n	
	SBS-612	Standard	65	65	65	25	18 x I_n	
	SBS-812	Standard	85	85	85	25	18 x I_n	
	SBS-C12	Standard	100	100	85	25	18 x I_n	
	SBS-H12	Standard	130	130	130	25	18 x I_n	
	SBS-E12 ②	Standard	200	150	65	30	30	
1600	SBN-516	Narrow	50	50	35	30	18 x I_n	200, 250, 300, 400, 600, 800, 1000, 1200, 1600
	SBN-616	Narrow	65	65	42	30	18 x I_n	
	SBN-C16	Narrow	100	100	65	30	18 x I_n	
	SBS-616	Standard	65	65	65	30	18 x I_n	
	SBS-816	Standard	85	85	85	30	18 x I_n	
	SBS-C16	Standard	100	100	85	30	18 x I_n	
	SBS-H16	Standard	130	130	130	30	18 x I_n	
	SBS-E16 ②	Standard	200	150	65	30	30	
2000	SBN-620	Narrow	65	65	65	35	18 x I_n	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000
	SBN-C20	Narrow	100	100	65	35	18 x I_n	
	SBS-620	Standard	65	65	65	35	18 x I_n	
	SBS-820	Standard	85	85	85	35	18 x I_n	
	SBS-C20	Standard	100	100	85	35	18 x I_n	
	SBS-H20	Standard	130	130	130	35	18 x I_n	
	SBS-E20 ②	Standard	200	150	65	30	30	

Notes

① Interruption ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short-time withstand rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short-time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Magnum SBSE current limiting power circuit breaker with fast opening contacts.

③ Not released.

④ Product to be tested. Contact Eaton for product rating.

⑤ Breaker applied in a tested fan-cooled enclosure.

Magnum SB is UL 1066 listed.

Magnum SB Switchboard Class Insulated Case Low Voltage Air Circuit Breakers, continued

			rms Symmetrical Current Ratings kA 50/60 Hz ①					
Frame Amperes	**Breaker Type Catalog Position 1–6**	**Frame Type**	**Interruption Rating at 254 Vac**	**Interruption Rating at 508 Vac**	**Interruption Rating at 635 Vac**	**Short-Time Withstand Rating**	**Fixed Internal Instantaneous Trip**	**Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)**
2500	SBS-625	Standard	65	65	65	45	18 x I_n	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000, 2500
	SBS-825	Standard	85	85	85	45	18 x I_n	
	SBS-C25	Standard	100	100	85	45	18 x I_n	
	SBS-H25	Standard	130	130	130	45	18 x I_n	
	SBS-E25 ②	Double	200	150	④	50	50	
3000	SBS-630	Standard	65	65	65	50	18 x I_n	200, 250, 300, 400, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000
	SBS-830	Standard	85	85	85	50	18 x I_n	
	SBS-C30	Standard	100	100	85	50	18 x I_n	
	SBS-H30	Standard	130	130	130	50	18 x I_n	
	SBS-E30 ②	Double	200	150	④	50	50	
4000	SBS-840	Double	85	85	85	72	18 x I_n	2000, 2500, 3000, 4000
	SBS-C40	Double	100	100	100	72	18 x I_n	
	SBS-H40	Double	130	130	130	72	18 x I_n	
	SBN-840	Double Narrow	85	85	65	72/65	18 x I_n	
	SBN-C40	Double Narrow	100	100	65	72/65	18 x I_n	
	SBS-E40 ②	Double	200	150	④	50	50	
5000	SBS-850	Double	85	85	85	85	18 x I_n	2500, 3000, 4000, 5000
	SBS-C50	Double	100	100	100	90	18 x I_n	
	SBS-H50	Double	130	130	130	90	18 x I_n	
	SBS-E50 ②③	Double	200	150	④	50	50	
6000	SBS-C60 ③	Double	100	100	100	100	18 x I_n	3000, 4000, 5000, 6000
	SBS-H60 ③	Double	130	130	130	100	18 x I_n	

Notes

① Interruption ratings shown based on breaker equipped with integral Digitrip RMS trip unit. Interruption ratings for non-automatic breakers are equal to the published short-time withstand rating. These interruption ratings are based on the standard duty cycle consisting of an open operation, a 15-second interval and a close-open operation, in succession, with delayed tripping in case of short-delay devices. The standard duty cycle for short-time ratings consists of maintaining the rated current for two periods of 1/2 seconds each, with a 15-second interval of zero current between the two periods.

② Magnum SBSE current limiting power circuit breaker with fast opening contacts.

③ Breaker applied in a tested fan-cooled enclosure.

④ Product to be tested. Contact Eaton for product rating.

Magnum SB is UL 1066 listed.

Digitrip Trip Units for Magnum SB and Magnum DS ANSI/UL Rated Power Circuit Breakers

Trip Unit Type		Digitrip 520	Digitrip 520M	Digitrip 520MC	Digitrip 1150+ ①
Ampere range		200–6000A	200–6000A	200–6000A	200–6000A
Interruption rating at 480V		42–200 kA	42–200 kA	42–200 kA	42–200 kA
rms sensing		Yes	Yes	Yes	Yes
Protection and Coordination					
Protection	Ordering options	LI, LSI, LSIG	LSI, LSIG, LSIA	LSI, LSIG, LSIA	LSI, LSIG, LSIA
	Fixed rating plug (I_n)	Yes	Yes	Yes	Yes
	Overtemperature trip	Yes	Yes	Yes	Yes
Long delay protection (L)	Long delay pickup	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)
	Long delay time I^2t at 6 x I_r	2–24 sec	2–24 sec	2–24 sec	2–24 sec
	Long delay time I^4t	No	No	No	1–5 sec
	IEEE curves	No	No	No	Yes
	Long delay thermal memory	Yes	Yes	Yes	Yes
	High load alarm	No	No	No	0.5–1.0 x (I_r)
Short delay protection (S)	Short delay pickup	200–1000% x (I_r) and M1	200–1000% x (I_r) and M1	200–1000% x (I_r) and M1	200–1000% x (I_r) and M1
	Short delay time I^2t at 8 x I_r	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Short delay time flat	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Short delay time ZSI	Yes	Yes	Yes	Yes
Instantaneous protection (I)	Instantaneous pickup	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1
	Making current release	Yes	Yes	Yes	Yes
	Off position	LSI and LSIG	Yes	Yes	Yes
Ground fault protection (G) ②	Ground fault alarm	No	Yes	Yes	Yes
	Ground fault pickup	25–100% x (I_n)	25–100% x (I_n)	25–100% x (I_n)	24–100% x (I_n)
	Ground fault delay I^2t at 0.625 x I_n	100–500 ms	100–500 ms	100–500 ms	100–500 ms
Disable ground fault protection		No	No	No	No
Neutral protection (N)		Model LSI	Model LSI	Model LSI	Model LSI
System Diagnostics					
Cause of trip LEDs		Yes	Yes	Yes	Yes
Magnitude of trip information		No	Yes	Yes	Yes
Remote signal contacts		No	Yes	Yes	Yes
Programmable contacts		No	No	No	Yes
Electronic operations counter		No	No	No	Yes

Notes

① Over and undervoltage alarm or trip, over and underfrequency alarm or trip, voltage unbalance alarm or trip, reverse power trip and phase rotation alarm are included.

② 1200A maximum ground fault setting per UL/NEC.

I_n = Rating plug and sensor rating.
I_r = Long delay pickup setting.

Digitrip Trip Units for Magnum SB ANSI/UL Rated Power Circuit Breakers, continued

Trip Unit Type	Digitrip 520	Digitrip 520M	Digitrip 520MC	Digitrip 1150+ ①
System Monitoring				
Digital display	No	4-Character LCD	4-Character LCD	24-Character LED
Current (%) full scale sensor	No	Yes +/– 2%	Yes +/– 2%	Yes +/– 1%
Voltage (%) L to L	No	No	No	Yes +/– 1%
Power and energy (%)	No	No	No	Yes +/– 2%
Apparent power kVA and demand	No	No	No	Yes
Reactive power kVAR	No	No	No	Yes
Power factor	No	No	No	Yes
Crest factor	No	No	No	Yes
System Communications				
Type	—	—	INCOM/PowerNet/Modbus ②/ PROFIBUS ②	INCOM/PowerNet/TripLink/ Modbus ②/PROFIBUS ②
Power supply in breaker	N/A	Optional	Standard	Standard
Additional Features				
Trip log (three events)	No	No	No	Yes
Electronic operations counter	No	No	No	Yes
Testing method ③	Test set	Test set	Test set	Integral and test set
Waveform capture	No	No	No	Yes
ARMs (Arcflash Reduction Maintenance System Mode)	No	No	Yes	Yes ④
Breaker health monitor	No	No	No	Yes
Programmable relay functions	No	No	No	Yes ①

Notes

① Over and undervoltage alarm or trip, over and underfrequency alarm or trip, voltage unbalance alarm or trip, reverse power trip and phase rotation alarm are included.
② Requires externally mounted MMINT or PMINT module.
③ Test set for secondary injection.
④ Contact Eaton for availability.

I_n = Rating plug and sensor rating.
I_r = Long delay pickup setting.

Magnum Double Narrow Frame Drawout Air Circuit Breaker With Cassette

Contents

Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	
Catalog Number Selection	**V4-T3-21**
Technical Data and Specifications	**V4-T3-24**
Magnum Options and Accessories	**V4-T3-27**
Wiring Diagrams	**V4-T3-29**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Magnum IEC Rated Air Circuit Breakers

Product Description

Magnum air circuit breakers are designed to enable global power distribution solutions in IEC switchboards and other custom enclosures.

- Magnum IEC air circuit breakers have interruption ratings up to 100 kA at 690 Vac with continuous current ratings up to 6300A
- Magnum IEC air circuit breaker continuous current frames are 100% rated. No thermal de-rating is required when applying the breaker in the low voltage systems enclosure at ambient temperatures of 104°F (40°C)
- Magnum IEC breakers carry the KEMA Keur Mark, which requires periodic follow-up testing, witnessed by KEMA, to demonstrate our product performs to its published nameplate ratings. This differentiates Magnum air circuit breakers from the competition, where in general, self-certification testing is performed on products when initially introduced with no binding commitments to perform subsequent follow-up third-party testing

Standards and Certifications

IEC Test Certifications

Magnum air circuit breakers meet or exceed the applicable IEC standards, including:

- EN/IEC 60947-2
- KEMA third-party witness and follow-up testing

Comprehensive Enclosure Solutions

Magnum air circuit breakers have proven performance in IEC switchboards and custom enclosures manufactured by Eaton and Low Voltage Systems Builders (OEMs) to the following standards:

- EN/IEC 60947-1
- EN/IEC 60439-1
- Eaton manufactured IEC Low Voltage Switchboard solutions include:
  - Eaton MEM M-Form (UK) Low Voltage Switchboards
  - Eaton Holec® Capitole 40 and Capitole 20 (Holland) Low Voltage Switchboards
  - Eaton Tabula Low Voltage Switchboard Systems (global) for Low Voltage Systems Builders
  - Eaton Elatis (Germany) Low Voltage Switchboards
  - Eaton Xenergy and Modan switchboard systems (global) for low voltage systems builders

Approvals and Marks

Magnum air circuit breakers carry the following approvals and approval marks:

- CE
- KEMA Keur mark
- ABS (American Bureau of Shipping) Type Listed Certificate Number 04-HS422844B-PDA-DUB
- CCC (Certificate for China Compulsory Product Certification) to GB14048.2-2001, Certificate Numbers:
  - 2005010307139381
  - 2003010307094561
  - 2003010307094558
- American Bureau of Shipping (ABS)
- Det Norske Veritas (DNV)
- Lloyds of London
- South African Bureau of Standards (SABS)
- For a complete and comprehensive listing of all low voltage power breakers, please visit www.eaton.com

CE KEMA KEUR

Note: The KEMA Keur Mark on the Magnum ACB Label Confirms Third-Party Witness and Follow-up Testing

Catalog Number Selection

Magnum IEC Breaker Product Family ①

MW N 5 12 4 V E A 03 MT 6 M C J 2 Y C N M W X

Breaker Frame
- **I** = Standard or double
- **N** = Narrow
- **K** = Special 1100 Vac ACB

Interrupting I_{cu}
- **4** = 40 kV
- **5** = 50 kV
- **6** = 65 kV
- **8** = 85 kV
- **C** = 100 kV
- **Z** = 25 kV (1100 Vac MWK)

Continuous Amperes and Phasing (Facing Front of Breaker)
- **08** = 800 ABC
- **10** = 1000 ABC
- **12** = 1250 ABC
- **16** = 1600 ABC
- **20** = 2000 ABC
- **25** = 2500 ABC
- **32** = 3200 ABC
- **41** = 4000 ABC (standard drawout only)
- **4N** = 4000 AABBCC
- **5N** = 5000 AABBCC
- **6N** = 6300 AABBCC
- **40** = 4000 ABCABC
- **50** = 5000 ABCABC
- **60** = 6300 ABCABC

Poles and Neutral (Facing Front of Breaker)
- **3** = Three
- **4** = Four (neutral left)
- **R** = Four (reserved for neutral right)

Mounting Configuration and Load Terminals
- **H** = Fixed horizontal
- **V** = Fixed vertical
- **L** = Drawout horizontal

Nameplate Language
- **E** = English
- **A** = Spanish

Sensor and Rating Plug Rating
- **NN** = None
- **02** = 200
- **05** = 250
- **03** = 300
- **04** = 400
- **06** = 600
- **07** = 630
- **08** = 800
- **10** = 1000
- **12** = 1200
- **13** = 1250
- **16** = 1600
- **20** = 2000
- **25** = 2500
- **30** = 3000
- **32** = 3200
- **40** = 4000
- **50** = 5000
- **63** = 6300

Trip Unit and Protection, (and External Control Voltage When Required)
- **NN** = Non-automatic (no trip unit)
- **22** = 520 LI
- **52** = 520 LSI
- **5W** = 520i LSIG
- **M2** = 520M LSI
- **MT** = 520M LSI (24–48 Vdc)
- **MU** = 520M LSI (120 Vac)
- **MV** = 520M LSI (240 Vac)
- **MW** = 520Mi LSIG
- **MJ** = 520Mi LSIG (24–48 Vdc)
- **MK** = 520Mi LSIG (120 Vac)
- **ML** = 520Mi LSIG (240 Vac)
- **ME** = 520M LSIA (24–48 Vdc)
- **MC** = 520M LSIA (120 Vac)
- **MF** = 520M LSIA (240 Vac)
- **CT** = 520MC LSI (24–48 Vdc)
- **CU** = 520MC LSI (120 Vac)
- **CV** = 520MC LSI (240 Vac)
- **CE** = 520MC LSIA (24–48 Vdc)
- **CC** = 520MC LSIA (120 Vac)
- **CF** = 520MC LSIA (240 Vac)
- **CJ** = 520MCi LSIG (24–48 Vdc)
- **CK** = 520MCi LSIG (120 Vac)
- **CF** = 520MCi LSIG (240 Vac)
- **C1** = 520MC ARMS LSI (24–48 Vdc)
- **C2** = 520MC ARMS LSI (120 Vac)
- **C3** = 520MC ARMS LSI (240 Vac)
- **C4** = 520MC ARMS LSIA (24–48 Vdc)
- **C5** = 520MC ARMS LSIA (120 Vac)
- **C6** = 520MC ARMS LSIA (240 Vac)
- **C7** = 520MC ARMS LSIG (24–48 Vdc)
- **C8** = 520MC ARMS LSIG (120 Vac)
- **C9** = 520MC ARMS LSIG (240 Vac)
- **1W** = 1150i LSI (24–48 Vdc)
- **1N** = 1150i LSI (120 Vac)
- **1P** = 1150i LSI (240 Vac)
- **1R** = 1150i LSIG/A (24–48 Vdc)
- **1S** = 1150i LSIG/A (120 Vac)
- **1T** = 1150i LSIG/A (240 Vac)

Note

① Exclusionary rules apply. Refer to price list. Confirm all final part numbers with Eaton. Format structure subject to modifications and additions without notice.

Magnum IEC Breaker Product Family, continued ①

MW N 5 12 4 V E A 03 MT 6 M C J 2 Y C N M W X

Shunt Trip Attachment (STA)
- **N** = None
- **A** = 110–127 Vac/Vdc
- **R** = 208–240 Vac/Vdc
- **C** = 24 Vdc
- **H** = 48 Vdc
- **B** = 110–127 Vac/Vdc (100% duty)
- **S** = 220–250 Vac/Vdc (100% duty)
- **D** = 24 Vdc (100% duty)
- **K** = 48 Vdc (100% duty)
- **J** = 60 Vdc (100% duty)
- **6** = 60 Vdc

Motor Operator
- **M** = Manual operated
- **N** = 110–125 Vac (5-sec)
- **W** = 110–125 Vdc (5-sec)
- **T** = 220–250 Vdc (5-sec)
- **P** = 220–240 Vac (5-sec)
- **L** = 24 Vdc (5-sec)
- **K** = 48 Vdc (5-sec)
- **S** = 60 Vdc (5-sec)
- **1** = 110–125 Vac (3-sec)
- **2** = 220–250 Vac (3-sec)
- **4** = 24 Vdc (3-sec)
- **8** = 48 Vdc (3-sec)
- **5** = 110–125 Vdc (3-sec)
- **9** = 220–250 Vdc (3-sec)

Spring Release Device (SRD)
- **N** = None
- **A** = 110–127 Vac/Vdc
- **R** = 208–240 Vac/Vdc
- **C** = 24 Vdc
- **H** = 48 Vdc
- **S** = 60 Vdc

Undervoltage Release (UVR) or 2nd Shunt Trip (ST)
- **N** = None
- **A** = UVR (110–127 Vac)
- **R** = UVR (208–240 Vac)
- **C** = UVR (24 Vdc)
- **H** = UVR (48 Vdc)
- **D** = UVR (60 Vdc)
- **E** = UVR (110–125 Vdc)
- **F** = UVR (220–250 Vdc)
- **G** = UVR (32 Vdc)
- **X** = UVR (380–415 Vac)
- **J** = UVR (480 Vac)
- **K** = UVR (600 Vac)
- **1** = 2nd ST (110–127 Vac/Vdc)
- **2** = 2nd ST (208–250 Vac/Vdc)
- **3** = 2nd ST (24 Vdc)
- **4** = 2nd ST (48 Vdc)
- **6** = 2nd ST (60 Vdc)
- **B** = 2nd ST (110–127 Vac/Vdc 100% duty)
- **O** = 2nd ST (220–250 Vac/Vdc 100% duty)
- **I** = 2nd ST (24 Vdc 100% duty)
- **Q** = 2nd ST (48 Vdc 100% duty)
- **9** = 2nd ST (60 Vdc 100% duty)

Auxiliary Switch
- **N** = None
- **2** = 2A/2B
- **4** = 2A/2B
- **6** = 2A/2B

Bell Alarms Switch (OTS) with 2a/2b Contacts and/or Mechanical Trip Indicator

	Mech. Trip Indicator	Mech. Interlock for Manual Reset	OTS Switch with Two Form C Contacts
E =	No	—	No
N =	Yes	No	No
Y =	Yes	No	Yes
M =	Yes	Yes	No
L =	Yes	Yes	Yes
F =	Yes	No	Yes with 24V reset
G =	Yes	No	Yes with 120V reset
H =	Yes	No	Yes with 240V reset
I =	Yes	Yes	Yes with 24V reset
J =	Yes	Yes	Yes with 120V reset
K =	Yes	Yes	Yes with 240V reset

Padlock Provisions for Blocking Close and/or Open ACB Manual Pushbuttons
- **N** = None
- **M** = Metal (block close and open)
- **P** = Plastic (block close and open)
- **C** = Metal (block close only)
- **H** = Plastic (block close only)

Operations Counter and/or Keylock Provisions

	Counter	Keylock Provisions
N =	No counter	No locks
K =	No counter	Kirk lock
C =	No counter	Castell lock
R =	No counter	Ronis lock
S =	No counter	CES lock
A =	Counter	No lock
Y =	Counter	Kirk lock
L =	Counter	Castell lock
H =	Counter	Ronis lock indicator
E =	Counter	CES lock

Latch Checking Switch/Trip Unit Metering Voltage Connection for Digitrip 1150 Trip Unit

Latch Check Switch	1150 Voltage Connection
N = None	Upper terminals
M = None	Lower terminals
L = LCS wired to SRD	Upper terminals
Y = LCS wired to SRD	Lower terminals
C = LCS wired external	Upper terminals
D = LCS wired external	Lower terminals

ACB Shipping Instructions
- **A** = Fixed ACB with door kit
- **F** = Fixed ACB without door kit
- **A** = D/O ACB only without door kit
- **C** = D/O ACB in cassette (un-wired)
- **P** = D/O ACB in cassette (pre-wired)
- **S** = D/O ACB in cassette (shutters)
- **W** = D/O ACB in cassette (pre-wired and shutters)

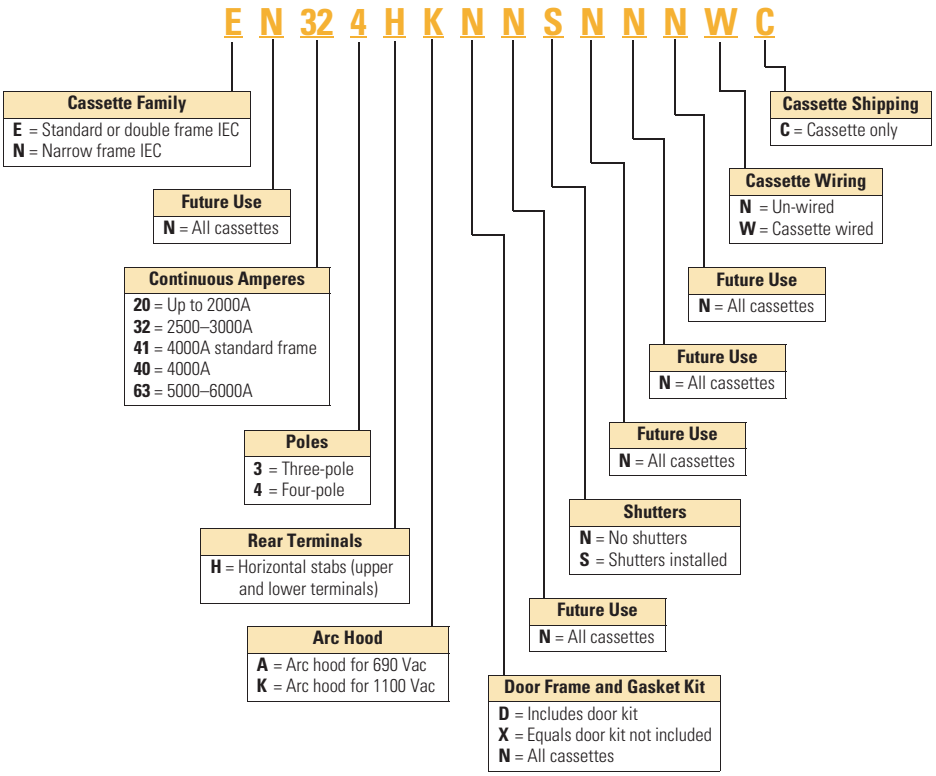
Double frame D/O ACBs ship without cassette

Future Use
- **X** = All ACBs

Note

① Exclusionary rules apply. Refer to price list. Confirm all final part numbers with Eaton. Format structure subject to modifications and additions without notice.

Cassette Magnum IEC Breaker Product Family ①



Note

① Exclusionary rules apply. Refer to price list. Confirm all final part numbers with Eaton. Format structure subject to modifications and additions without notice.

Technical Data and Specifications

Magnum IEC 60947-2 Rated Air Circuit Breakers

Frame Amperes	Breaker Type Catalog Position 1–6	Frame Type	rms Symmetrical Current Ratings kA ① Interruption Rating at 240 Vac $I_{cu} = I_{cs}$	Interruption Rating at 440 Vac $I_{cu} = I_{cs}$	Interruption Rating at 690 Vac $I_{cu} = I_{cs}$	Withstand Rating I_{cw} 1-Sec / 3-Sec	Fixed Internal Instantaneous Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker I_n Rating)
800	MWN-508	Narrow	50	50	50	50/—	—	200, 250, 300, 400, 630, 800
	MWN-608	Narrow	65	65	65	65/40	—	
	MWI-608	Standard	65	65	65	65/—	—	
	MWI-808	Standard	85	85	85	85/65	—	
	MWI-C08	Standard	100	100	85	85/65	85	
1000	MWN-410	Narrow	40	40	40	40/—	—	200, 250, 300, 400, 630, 800, 1000
	MWN-510	Narrow	50	50	50	50/—	—	
	MWN-610	Narrow	65	65	65	65/40	—	
	MWI-610	Standard	65	65	65	65/—	—	
	MWI-810	Standard	85	85	85	85/65	—	
	MWI-C10	Standard	100	100	85	85/65	85	
1250	MWN-412	Narrow	40	40	40	40/—	—	200, 250, 300, 400, 630, 800, 1000, 1250
	MWN-512	Narrow	50	50	50	50/—	—	
	MWN-612	Narrow	65	65	65	65/40	—	
	MWI-612	Standard	65	65	65	65/—	—	
	MWI-812	Standard	85	85	85	85/65	—	
	MWI-C12	Standard	100	100	85	85/65	85	
1600	MWN-516	Narrow	50	50	50	50/—	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600
	MWN-616	Narrow	65	65	65	65/40	—	
	MWI-616	Standard	65	65	65	65/—	—	
	MWI-816	Standard	85	85	85	85/65	—	
	MWI-C16	Standard	100	100	85	85/65	85	
2000	MWN-520	Narrow	50	50	50	50/30	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000
	MWN-620	Narrow	65	65	65	65/40	—	
	MWI-620	Standard	65	65	65	65/50	—	
	MWI-820	Standard	85	85	85	85/65	—	
	MWI-C20	Standard	100	100	85	85/65	85	
2500	MWI-625	Standard	65	65	65	65/—	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000, 2500
	MWI-825	Standard	85	85	85	85/65	—	
	MWI-C25	Standard	100	100	85	85/65	85	
	MWI-H25	Standard	125	125	125	85/65	—	
3200	MWI-632	Standard	65	65	65	65/50	—	200, 250, 300, 400, 630, 800, 1000, 1250, 1600, 2000, 2500, 3200
	MWI-832	Standard	85	85	85	85/65	—	
	MWI-C32	Standard	100	100	85	85/65	85	
	MWI-H32	Standard	—	—	125	—	—	
4000	MWI-641 ②	Standard	65	65	65	65/50	—	2000, 2500, 3200, 4000
	MWI-841 ②	Standard	85	85	85	85/65	—	
	MWI-C41 ②	Standard	105	105	85	85/65	—	
	MWN-64N	Double narrow	65	65	65	65/—	—	
	MWN-84N	Double narrow	85	85	65	85/—	—	
	MWN-C4N	Double narrow	100	100	65	100/—	—	
	MWI-64N	Double	65	65	65	65/—	—	
	MWI-84N	Double	85	85	85	85/—	—	
	MWI-C4N	Double	100	100	100	100/—	—	
5000	MWI-85N	Double	85	85	85	85/—	—	2500, 3200, 4000, 5000
	MWI-C5N	Double	100	100	100	100/—	—	
6300	MWI-86N	Double	85	85	85	85/—	—	3200, 4000, 5000, 6300
	MWI-C6N	Double	100	100	100	100/—	—	

Notes

① Interruption ratings shown based on breaker equipped with integral Digitrip RMS Trip Unit. Interruption ratings for non-automatic breakers are equal to the published breaker I_{cw} rating.

② Magnum IEC standard frame breakers rated for 4000A continuous current are available in drawout configuration only.

Digitrip Trip Units for Magnum IEC Rated Air Circuit Breakers

Trip Unit Type		Digitrip 520*i*	Digitrip 520M*i*	Digitrip 520MC*i*	Digitrip 1150*i*+ ①
Ampere range		200–6300A	200–6300A	200–6300A	200–6300A
Interruption rating at 690V		40–100 kA	40–100 kA	40–100 kA	40–100 kA
rms sensing		Yes	Yes	Yes	Yes
Protection and Coordination					
Protection	Ordering options	LI, LSI, LSIG	LSI, LSIG, LSIA	LSI, LSIG, LSIA	LSI, LSIG, LSIA
	Fixed rating plug (I_n)	Yes	Yes	Yes	Yes
	Overtemperature trip	Yes	Yes	Yes	Yes
Long delay protection (L)	Long delay setting	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)
	Long delay time I^2t at 6 x I_r	2–24 sec	2–24 sec	2–24 sec	2–24 sec
	Long delay time I^4t	No	No	No	1–5 sec
	IEC Type A, B, C curves	No	No	No	Yes
	Long delay thermal memory	Yes	Yes	Yes	Yes
	High load alarm	No	No	No	0.7–1.0 x I_r
Short delay protection (S)	Short delay pickup	200–1000% x (I_r) and M1	200–1000% x (I_r) and M1	200–1000% x (I_r) and M1	150–1000% x (I_r) and M1
	Short delay time I^2t at 8 x I_r	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Short delay time flat	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Short delay time ZSI	Yes	Yes	Yes	Yes
Instantaneous protection (I)	Instantaneous pickup	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1	200–1000% x (I_n) and M1
	Making current release	Yes	Yes	Yes	Yes
	Off position	Yes	Yes	Yes	Yes
Earth fault protection (G)	Earth fault alarm	No	Yes	Yes	Yes
	Earth fault pickup	25–100% x (I_n)	25–100% x (I_n)	25–100% x (I_n)	24–100% x (I_n)
	Earth fault delay I^2t at 0.625 x I_n	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Earth fault delay flat	100–500 ms	100–500 ms	100–500 ms	100–500 ms
	Earth fault ZSI	Yes	Yes	Yes	Yes
	Earth fault memory	Yes	Yes	Yes	Yes
Disable ground fault protection		No	No	No	Yes
Neutral protection (N)		Model LSI	Model LSI	Model LSI	Model LSI
System Diagnostics					
Cause of trip LEDs		Yes	Yes	Yes	Yes
Magnitude of trip information		No	No	No	Yes
Remote signal contacts		No	Yes	Yes	Yes
Programmable contacts		No	No	No	2

Notes

① Over and undervoltage alarm or trip, over and underfrequency alarm or trip, voltage unbalance alarm or trip, reverse power trip and phase rotation alarm are included.

I_n = Rating plug rating.
I_r = LDPU setting.

i Trip units are only used on IEC breakers with earth fault.

Digitrip Trip Units for Magnum IEC Rated Air Circuit Breakers, continued

Trip Unit Type	Digitrip 520*i*	Digitrip 520M*i*	Digitrip 520MC*i*	Digitrip 1150*i*+ ①
System Monitoring				
Digital display	No	4-Character LCD	4-Character LCD	24-Character LED
Current (%) full scale sensor	No	Yes +/– 2%	Yes +/– 2%	Yes +/– 1%
Voltage (%) L to L	No	No	No	Yes +/– 1%
Power and energy (%)	No	No	No	Yes +/– 2%
Apparent power kVA and demand	No	No	No	Yes
Reactive power kVAR	No	No	No	Yes
Power factor	No	No	No	Yes
Crest factor	No	No	No	Yes
Power quality—harmonics	No	No	No	Yes
% THD	No	No	No	Yes
System Communications				
Type	—	—	INCOM/PowerNet/Modbus ②/ PROFIBUS ②	INCOM/PowerNet/TripLink/ Modbus ②/PROFIBUS ②
Power supply in breaker	N/A	Optional	Standard	Standard
Additional Features				
Trip log (three events)	No	No	No	Yes
Electronic operations counter	No	No	No	Yes
Testing method ③	Test set	Test set	Test set	Integral and test set
Waveform capture	No	No	No	Yes
ARMs (Arcflash Reduction Maintenance System Mode)	No	No	Yes	Yes ④
Breaker health monitor	No	No	No	Yes
Programmable relay functions	No	No	No	Yes ①

Notes

① Over and undervoltage alarm or trip, over and underfrequency alarm or trip, voltage unbalance alarm or trip, reverse power trip and phase rotation alarm are included.

② Requires externally mounted MMINT or PMINT module.

③ Test set for secondary injection.

④ Contact Eaton for availability.

I_n = Rating plug rating.
I_r = LDPU setting.

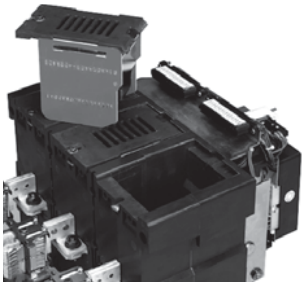
i Trip units are only used on IEC breakers with earth fault.

Magnum Options and Accessories

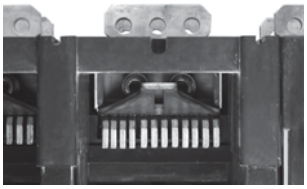
Breaker-Mounted Options and Accessories

Magnum breakers are available with a comprehensive array of factory-installed breaker options to enable configured-to-order solutions for specified customer requirements. Field option kits are available to provide easy service, modification and customization of the breaker at the point of use.

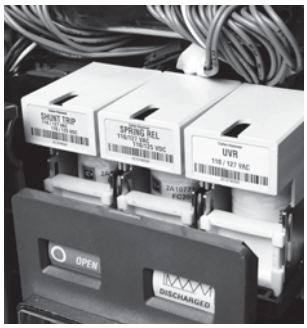
- **Shunt Trip device (ST)**. Provides for remote electrically controlled breaker opening when energized by a rated voltage input
- **Spring Charge Motor (MOT)**. Charges the breaker closing springs automatically, facilitating remote or local closing. The motor assembly includes its own cut-off switch that changes state at the end of the charging cycle. This contact can be wired out for external indication
- **Spring Release device (SR)**. Provides for remote electrically controlled breaker closing when its coils are energized by a rated voltage input
- **Undervoltage Release (UVR)**. Trips the breaker when an existing voltage signal is lost or falls below an established threshold
- **Auxiliary Switch**. Up to 6a/6b auxiliary individual dedicated contacts are available for customer use to indicate if the breaker is in the OPEN or CLOSE position
- **Mechanical Trip Indicator Flag.** The red trip indicator flag pops out to provide local visual indication when the Digitrip RMS trip unit acts to trip the breaker on an overcurrent condition. Available in two options: an interlocked version that mechanically locks out the breaker until the indicator is manually reset and a non-interlocked version for indication only.
- **Bell Alarm/Overcurrent Trip Switch (OTS)**. Provides 2 Form C (changeover) contacts that change state when the Digitrip RMS trip unit acts to trip the breaker on an overcurrent condition. The contacts are available for external indication or customer use and are manually reset by the Mechanical Trip Indicator
- **Padlockable Pushbutton Cover**. Permits padlocking hinged cover plates to block access to the PUSH ON and PUSH OFF buttons on the breaker faceplate
- **Mechanical Operations Counter**. Records mechanical operations of the breaker over its installed life
- **Key Off Lock Provisions**. Enables mounting of a single cylinder Kirk®, Castell or Ronis key lock to lock the breaker in the OPEN position
- **Latch Check Switch**. Provides 1 Form C (changeover contact) that changes state when the breaker is ready to close. Can be wired to the Spring Release Device for fast transfer applications or wired for external ready-to-close indication



Arc Chutes are Easily Removable for Inspection and Access to Breaker Contacts

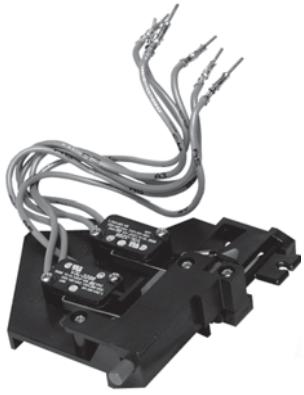


Heel-Toe Contact Design Provides Demonstrated Long Life and Includes Wear Indicator for Visual Inspection



Shunt Trip, Spring Release and Undervoltage Release Device Installed on Accessory Deck

Auxiliary Switches Come in Modular 2a/2b Contact Stages Providing up to 6a/6b Dedicated Contacts



Mechanical Trip Indicator With Bell Alarm (OTS) Switches Mounted

Magnum Breaker Control Device Application Guide—Vdc

Breaker Control Device Nominal Voltage		24 Vdc	32 Vdc	48 Vdc	60 Vdc	125 Vdc	250 Vdc
Shunt Trip (ST)—Trip Circuit							
Operational voltage range	70–110%	17–26 Vdc	—	34–53 Vdc	42–66 Vdc	77–138 Vdc	154–275 Vdc
Power consumption (inrush)	Required for 35 ms ①	250W	—	250W	250W	450W	450W
Opening time	Seconds	35 ms	—	35 ms	35 ms	35 ms	35 ms
Spring Release (SR)—Close Circuit							
Operational voltage range	70–110%	17–26 Vdc	—	34–53 Vdc	42–66 Vdc	77–138 Vdc	154–275 Vdc
Power consumption (inrush)	Required for 200 ms	250W	—	250W	250W	450W	450W
Closing time	Seconds	40 ms	—	40 ms	40 ms	40 ms	40 ms
Spring Charge Motor (MOT)							
Operational voltage range	85–110% voltage	20–26 Vdc	—	41–53 Vdc	51–66 Vdc	94–138 Vdc	187–225 Vdc
Amperes (running)	Running	12.0A	—	5.0A	4.0A	2.0A	1.0A
Amperes (inrush)	% of running	300%	—	500%	500%	600%	600%
Power consumption	—	300W	—	250W	250W	250W	250W
Charging time	Seconds	5 sec	—	5 sec	5 sec	5 sec	5 sec
Undervoltage Release (UVR)							
Operational voltage range	85–110% voltage	20–26 Vdc	27–35 Vdc	41–53 Vdc	51–66 Vdc	94–138 Vdc	187–275 Vdc
Dropout voltage range	30–60% voltage	7–14 Vdc	10–19 Vdc	14–29 Vdc	18–36 Vdc	33–75 Vdc	66–150 Vdc
Power consumption (inrush)	Required for 200 ms	250W	275W	275W	275W	450W	450W
Power consumption (continuous)	Required for 400 ms	18W	15W	18W	18W	10W	10W
Opening time	Seconds	70 ms	70 ms	70 ms	70 ms	70 ms	70 ms
Auxiliary Switches							
Minimum load contact rating	Inductive load	0.5A	—	0.5A	—	0.5A	0.25A

Magnum Breaker Control Device Application Guide—Vac

Breaker Control Device Nominal Voltage		120 Vac	240 Vac	415 Vac	480 Vac	600 Vac
Shunt Trip (ST)—Trip Circuit						
Operational voltage range	70 –110%	77–140 Vac	146–264 Vac	—	—	—
Power consumption (inrush)	Required for 35 ms	450 VA	450 VA	—	—	—
Opening time	Seconds	35 ms	35 ms	—	—	—
Spring Release (SR)—close circuit						
Operational voltage range	70–110%	77–140 Vac	146–264 Vac	—	—	—
Power consumption (inrush)	Required for 200 ms	450 VA	450 VA	—	—	—
Closing time	Seconds	40 ms	40 ms	—	—	—
Spring Charge Motor (MOT)						
Operational voltage range	85–110% voltage	93–140 Vdc	177–264 Vdc	—	—	—
Amperes (running)	Running	2.0A	1.0A	—	—	—
Amperes (inrush)	% of running	600%	600%	—	—	—
Power consumption	—	250 VA	250 VA	—	—	—
Charging time	Seconds	5 sec	5 sec	—	—	—
Undervoltage Release (UVR)						
Operational voltage range	85–110% voltage	94–140 Vac	177–264 Vac	323–457 Vac	408–528 Vac	510–660 Vac
Dropout voltage range	30–60% voltage	33–76 Vac	62–144 Vac	114–249 Vac	144–288 Vac	180–360 Vac
Power consumption (inrush)	Required for 200 ms	450 VA	400 VA	480 VA	400 VA	400 VA
Power consumption (continuous)	Required for 400 ms	10 VA	10 VA	10 VA	10 VA	10 VA
Opening time	Seconds	70 ms	70 ms	70 ms	70 ms	70 ms
Auxiliary Switches						
Minimum load contact rating	Inductive load	10A	10A	—	—	—

Note

① 100% duty shunt trips require power consumption (inrush) for 200 ms.

Wiring Diagrams

Typical Magnum Breaker Control Circuit

Legend:

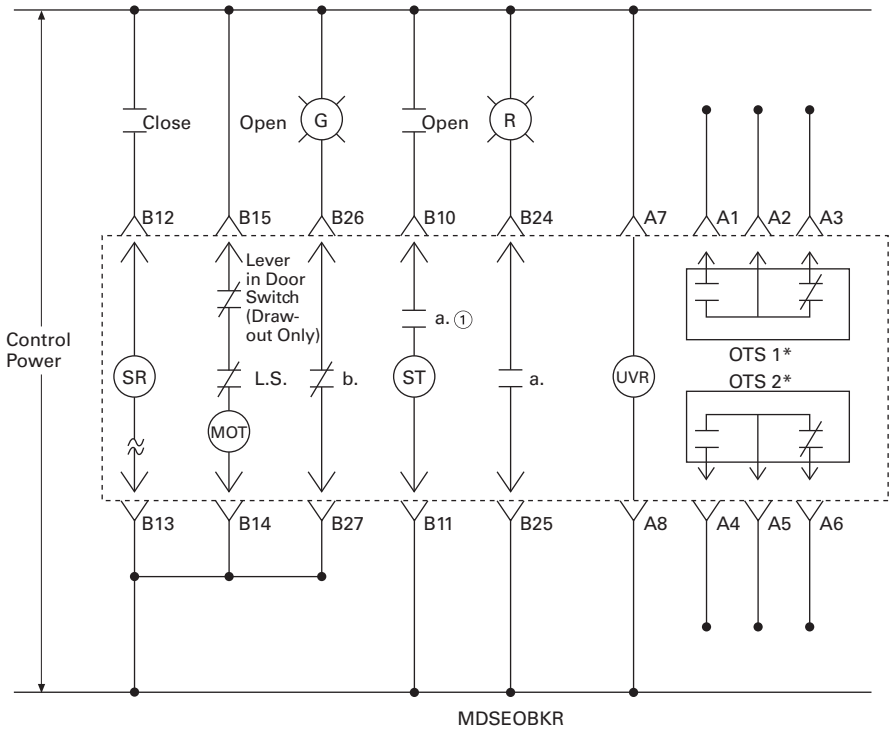
LS	Limit Switch for Closing Spring
MOT	Motor for Spring Charging
ST	Shunt Trip ①
SR	Spring Release
UVR	Undervoltage Release
OTS	Overcurrent Trip Switch

Description of Operation:

1 — Motor is energized through LS contact.
2 — Motor runs and charges closing spring.
3 — When closing spring is fully charged, LS contacts change state.
4 — Close contacts energize SR coil.
5 — When breaker closes, "b" opens.
6 — LS contacts change state and motor recharges closing springs.

Notes

* Contacts shown for breaker open (not fully charged), not tripped.
– – – – Dotted line denotes Magnum Breaker.
① Not needed with 100% duty rated shunt.



Magnum DC (Direct Current) Low Voltage Switches

Contents

Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	
Technical Data and Specifications	**V4-T3-31**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	**V4-T3-39**

Magnum DC (Direct Current) Low Voltage Switches

Product Description

Eaton Magnum DC switches are a comprehensive offering of third-party and globally certified DC switches that are designed to provide excellent safety with a high level of performance that meets the demands of a global market.

Applications

The new line of Magnum DC switches covers a wide range industry applications.

- Utility companies incorporating DC facility power and control for emergency or redundant power
- Backup UPS power systems requiring means to disconnect the battery for isolation and maintenance
- SCR and drive isolation switches for maintenance and emergency disconnect

Features and Benefits

The new DC switch in the industry-proven Magnum platform provides DC technology in a common power breaker platform.

- The DC switch provides disconnect and switching to meet demanding industry standards:
  - UL1066—300 Vdc, 50 kA withstand and interruption, up to 3200A continuous current
  - UL 489—600 Vdc, 50 kA withstand and interruption, up to 3200A continuous current
  - IEC 60947-2—1000 Vdc, 25 kA interruption and 65 kA withstand, up to 3200A
- Common accessories with the Magnum AC line of power circuit breakers reduces inventory and integration time
- Fixed and drawout versions address important design criteria, balancing cost, size and serviceability
- Internationally approved factory-installed and field-installable accessories identical to the Magnum air circuit breaker offering

Standards and Certifications

UL and ANSI Test Certifications

Magnum DC switches meet or exceed the applicable ANSI, NEMA, UL and CSA standards, including:

- ANSI C37.14 (Low Voltage DC Power Circuit Breakers Used in Enclosures)
- ANSI C37.16 (Preferred Ratings, Related Requirements, and Application Recommendations for Low Voltage Power Circuit Breakers and AC and DC Power Circuit Breakers)
- ANSI C37.17 (Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers)
- UL 1066 (Standard for Low Voltage AC and DC Power Circuit Breakers Used in Enclosures)
- UL 489 Molded Case Switches

IEC Test Certification

Magnum Air Circuit Breakers meet or exceed the applicable IEC standards

- EN/IEC 60947-2

Approvals and Marks

- UL listed: Magnum DS Breaker UL File No. E52096 and Cassette UL File No. E204565
- ABS (American Bureau of Shipping) Type Approval
- CE
- CCC (Certificate for China Compulsory Product Certification) to GB14048.2-2001
- Det Norske Veritas (DNV)
- Lloyds of London
- South African Bureau of Standards (SABS)
- For a complete and comprehensive listing of all low voltage power breakers, please visit www.eaton.com

Product Selection

Contact Eaton for pricing.

Technical Data and Specifications

Magnum ANSI DC Switches—Switchgear Class UL 1066 Low Voltage Power Circuit Breakers ①

Frame Amperes	Breaker Type	Frame Type	Poles in Series	Interruption Rating at 300 Vdc	Interruption Rating at 600 Vdc	Interruption Rating at 1000 Vdc	Withstand Rating	Fixed Internal Instantaneous Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker in Rating)
1600	DAS-516	Standard	2	50	—	—	50	—	None
2000	DAS-520	Standard	2	50	—	—	50	—	None
3200	DAS-532	Standard	2	50	—	—	50	—	None

Magnum ANSI DC Switches—UL 489 Switchboard

Frame Amperes	Breaker Type	Frame Type	Poles in Series	Interruption Rating at 300 Vdc	Interruption Rating at 600 Vdc	Interruption Rating at 1000 Vdc	Withstand Rating	Fixed Internal Instantaneous Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker in Rating)
3200	DBS-532 ②	Standard	3	—	50	—	50	—	None

Magnum IEC DC Switchgear Class IEC 60947-2 Low Voltage Power Circuit Breakers ①

Frame Amperes	Breaker Type	Frame Type	Poles in Series	Interruption Rating at 300 Vdc	Interruption Rating at 600 Vdc	Interruption Rating at 1000 Vdc	Withstand Rating	Fixed Internal Instantaneous Trip	Available Current Sensor and Rating Plugs for Digitrip RMS Trip Unit (Establishes Breaker in Rating)
800	DEM-208	Narrow	3	—	—	25	65	—	None
	DEK-208	Standard	3	—	—	25	65	—	None
1000	DEM-210	Narrow	3	—	—	25	65	—	None
	DEK-210	Standard	3	—	—	25	65	—	None
1250	DEM-212	Narrow	3	—	—	25	65	—	None
	DEK-212	Standard	3	—	—	25	65	—	None
1600	DEM-216	Narrow	3	—	—	25	65	—	None
	DEK-216	Standard	3	—	—	25	65	—	None
2000	DEM-220	Narrow	3	—	—	25	65	—	None
	DEK-220	Standard	3	—	—	25	65	—	None
2500	DEK-225	Standard	3	—	—	25	65	—	None
3200	DEK-232	Standard	3	—	—	25	65	—	None

Notes

① All DC products are non-automatic breakers.

② DBS is rated at UL 489 standards for 600 Vdc.

3

Series NRX Low Voltage Power Circuit Breakers

Contents

Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	
Standards and Certifications	**V4-T3-33**
Reference Information	**V4-T3-33**
Catalog Number Selection	**V4-T3-34**
Technical Data and Specifications	**V4-T3-36**
Medium Voltage Circuit Breakers	**V4-T3-39**

Series NRX Low Voltage Power Circuit Breakers

Product Description

Series NRX is a low voltage power circuit breaker suitable for UL 1558, UL 891, and IEC switchgear and switchboards. The compact size and weight of three-pole drawout with cassette Series NRX, see **Page V4-T3-38**, allows for a 24.00 (609.6 mm) switchgear enclosure.

The breaker ratings are:

- 800A for UL 1066
- 800A, 1200A for UL 489
- 630–1600A IEC 60947-2 from a voltage range of 220–725 Vac

Application Description

The Series NRX is a compact globally certified low voltage power (air) circuit breaker. It is rated for 800A (UL 1066), 800A and 1200A (UL 489) and 630–1600A (IEC 60947-2) with an interrupting capacity of 65 kA with short time withstand at 42 kA at the 440/480 Vac level.

The Series NRX circuit breaker provides all the capabilities of a power circuit breaker in the compact size of a molded case breaker. It offers you the same protection and performance —along with increased flexibility—at half the size of a typical power circuit breaker. The dimensions and design of Series NRX allows up to eight UL 1066 or UL 489 breakers in a 24-inch (600 mm) wide structure. The one frame size, regardless of ampere rating, reduces drawing conversion, structure integration time and parts inventory for several board, gear and machinery applications.

Features, Benefits and Functions

Series NRX utilizes several innovative technologies:

- Rogowski coil—does not saturate like iron core sensors, and one sensor accommodates 200–1600 ampere range. You never have to change a sensor and CTs are not required
- Tension clamp secondary terminals—10A continuous rating at 600V meets UL/CSA/RoHS and UL-94 V0. Mounted directly to fixed breaker or drawout cassette, they reduce wiring throughout enclosure and provide clean, organized wiring schemes
- Breaker-mounted communication modules —communication modules for INCOM™, Modbus® and PROFIBUS mount directly to the cassette, reducing the space and room required in gear for communication capability
- "Direct Drive" mechanism—symmetrically loaded forces of the two-staged stored energy mechanism improves robustness, reliability, and achieves improved breaker life ratings
- Fold-up cassette—with this simple design, all items in a cassette are replaceable without removing the cassette from the cell
- "Arc chute" design
- Breaker-mounted racking or levering-in device—Racking device is mounted on the breaker, decreasing the width of the cassette, because the cassette is not burdened with the cost or parts of the lev-in
- Plug-N-Play accessories—No special tools needed. Accessory comes with plug and wires ready to install

The use of these technologies allows Series NRX to offer a life of 20,000 mechanical operations and 10,000 electrical operations with a high degree of reliability.

Standards and Certifications

- UL 1066 (low voltage AC power circuit breakers used in enclosures)
- UL 489 (molded case circuit breakers, molded case switches and circuit breaker enclosures)
- EN 45011
- CEI EN 60947
- BS EN 60439-1 Form 4b
- IEC 60439-1 (low voltage switchgear and controlgear assemblies)
- IEC 60947-1 (low voltage switchgear and controlgear —Part 1 general rules)
- IEC 60947-2 (low voltage switchgear and controlgear —Part 2 circuit breakers)
- IEC 60947-3 (switches, disconnectors, switch-disconnectors and fuse-combination units)
- CSA 22.2 (molded case circuit breakers, molded case switches and circuit breaker enclosures)
- ANSI C37.51 (metal-enclosed low voltage AC power circuit breaker switchgear assemblies—conformance test procedures)
- ANSI C37.20.1 (metal-enclosed low voltage power circuit breaker switchgear)
- ANSI C37.60 (requirements for overhead, pad-mounted dry-type and submersible automatic reclosers and fault interrupters for AC systems)
- ANSI C37.50 (low voltage AC power circuit breakers used in enclosures—test procedures)
- ANSI C37.17 (for trip devices for AC and general purpose DC low voltage power circuit breakers)
- ANSI C37.16 (low voltage power circuit breakers and AC power circuit protectors—preferred ratings, related requirements, and application recommendations)
- ANSI C37.13 (IEEE® standard for low voltage AC power circuit breakers used in enclosures)
- CCC—China
- KEMA (&CB)
- UL 891 (deadfront switchboard)
- UL 1558 (metal-enclosed low voltage power circuit breaker switchgear)

Reference Information

List of Instruction Leaflets and Manuals

Description	Publication Number
Instruction Book for Fixed and Drawout Breaker/Cassette	MN01301001E
IL Drawout Circuit Breaker and Cassette Rejection Interlocks	IL01301006E
IL Auxiliary Switch in Right Accessory Tray	IL01301007E
IL UVR/ST/OTS in Left Accessory Tray	IL01301008E
IL Motor Operator	IL01301010E
IL Spring Release Device and Latch Check Switch (Numbers 5 and 6 are Combining into one Document)	IL01301010E
IL Door Escutcheon and Gasket Kit	IL01301012E
IL Drawout Cassette IP 20 Shutters	IL01301013E
IL Fixed Breaker Arc Hood Kit	IL01301014E
IL Fixed Breaker Front/Rear/Cable Connectors	IL01301015E
IL Drawout Cassette Front/Rear/Cable Connectors	IL01301016E
IL Racking Device Levering Device	IL01301018E
IL Mechanical Pop-Out Indicator and Interlocked Indicator	IL01301019E
IL Breaker and Cassette Phase Barriers	IL01301021E
IL Cassette Rails	IL01301025E
IL Mounting Feet	IL01301030E
IL Surface Mount	IL01301036E
IL Terminal Blocks	IL01301037E
IL Modbus Communication Adapter Module	IL01301034E
IL INCOM Communication Adapter Module	IL01301033E
IL Digitrip 520 and 520M Manual	IL70C1619H01
IL IP55 Cover	IL01301038E
PROFIBUS Communication Module	IL01301035E
IL Kirk Key Lock	IL01301039E
IL Ronis Key Lock	IL01301040E
IL Pushbutton Covers	IL01301041E

Catalog Number Selection

Series NRX Type NF-Frame Circuit Breaker (Exclusionary Rules Apply)

N S S6 08 3 W 52 8 A B A N 4 X N D X

Breaker Frame Size
- **N** = Type NF, 630–1600A, (70 mm pole spacing)

Standard, Mechanism, Device
- **S** = UL 1066, stored energy, power breaker
- **X** = UL 489, stored energy, insulated case breaker
- **E** = IEC 60947-2, stored energy, air breaker

Fault Current Rating
- **S4** = 42 kA at 480 Vac UL or 415 Vac IEC
- **S5** = 50 kA at 480 Vac UL or 415 Vac IEC
- **S6** = 65 kA at 480 Vac UL or 415 Vac IEC

Frame Rating (Amperes)
- **07** = 630 (IEC only)
- **08** = 800
- **10** = 1000 (IEC only)
- **12** = 1200 (UL only)
- **13** = 1250 (IEC only)
- **16** = 1600 (On NF: IEC only)

Poles, Phasing
- **3** = Three-pole, ABC
- **4** = Four-pole, NABC

Mounting Configuration
- **W** = Drawout
- **B** = Fixed mount rear connect, mounting bracket, with secondary terminal row
- **R** = Fixed mount rear connect, surface mount, with secondary terminal row
- **T** = Fixed mount front connect, surface mount, cable connect, with secondary terminal row
- **F** = Fixed mount front connect, mounting bracket, bus connect, with secondary terminal row
- **S** = Fixed mount front connect, surface mount, bus connect, with secondary terminal row

Rating Plug (Amperes)
- **1** = 200
- **2** = 250
- **3** = 300
- **4** = 400
- **5** = 500
- **6** = 600
- **7** = 630
- **8** = 800
- **A** = 1000
- **B** = 1200
- **C** = 1250
- **D** = 1600

Trip Unit, Power Supply

SW = Switch—no MCR—42 kA for IEC and UL 1066 (non-auto)	**1B** = 150 LSI, with ZSI , 24 Vdc
22 = 520 LI, no ZSI	**12** = 1150i LSI, no ZSI, 24 Vdc
52 = 520 LSI, no ZSI	**13** = 1150i LSI, with ZSI, 24 Vdc
53 = 520 LSI, with ZSI	**1E** = 1150 LSIA, no ZSI, 24 Vdc
5G = 520 LSIG, no ZSI	**1F** = 1150 LSIA, with ZSI, 24 Vdc
5H = 520 LSIG, with ZSI	**1L** = 1150 LSIG, no ZSI, 24 Vdc
M2 = 520M LSI, no ZSI, 24 Vdc	**1M** = 1150 LSIG, with ZSI, 24 Vdc
M3 = 520M LSI, with ZSI, 24 Vdc	**14** = 1150 LSIGA, no ZSI, 24 Vdc
MA = 520M LSIA, no ZSI, 24 Vdc	**15** = 1150 LSIGA, with ZSI, 24 Vdc
MB = 520M LSIA, with ZSI, 24 Vdc	**1C** = 1150 LSI, no ZSI, 24 Vdc, with ARMS
MG = 520M LSIG, no ZSI, 24 Vdc	**1D** = 1150 LSI, with ZSI, 24 Vdc, with ARMS
MH = 520M LSIG, with ZSI, 24 Vdc	**16** = 1150i LSI, no ZSI, 24 Vdc, with ARMS
R2 = 520M LSI, no ZSI, 24 Vdc, with ARMS	**17** = 1150i LSI, with ZSI, 24 Vdc, with ARMS
R3 = 520M LSI, with ZSI, 24 Vdc, with ARMS	**1J** = 1150 LSIA, no ZSI, 24 Vdc, with ARMS
RA = 520M LSIA, no ZSI, 24 Vdc, with ARMS	**1K** = 1150 LSIA, with ZSI, 24 Vdc, with ARMS
RB = 520M LSIA, with ZSI, 24 Vdc, with ARMS	**1R** = 1150 LSIG, with ZSI, 24 Vdc, with ARMS
RG = 520M LSIG, no ZSI, 24 Vdc, with ARMS	**1S** = 1150 LSIG, with ZSI, 24 Vdc, with ARMS
RH = 520M LSIG, with ZSI, 24 Vdc, with ARMS	**18** = 1150i LSIGA, no ZSI, 24 Vdc, with ARMS
1A = 1150 LSI, with ZSI, 24 Vdc	**19** = 1150i LSIGA, with ZSI, 24 Vdc, with ARMS

Shunt Trip
- **N** = No shunt trip
- **A** = 110–127 Vac/Vdc
- **R** = 208–240 Vac/Vdc
- **L** = 24 Vdc
- **H** = 48 Vdc
- **S** = 60 Vdc

Motor Operator
- **M** = Manually operated
- **B** = 110–125 Vac
- **W** = 110–125 Vdc
- **T** = 208–250 Vac
- **P** = 220–250 Vdc
- **L** = 24 Vdc
- **H** = 48 Vdc
- **S** = 60 Vdc

Spring Release, Latch Check Switch
- **N** = No spring release, no LCS
- **E** = No spring release, LCS wired external
- **A** = 110–127 Vac/Vdc, no LCS
- **B** = 110–127 Vac/Vdc, spring release LCS
- **C** = 110–127 Vac/Vdc, LCS wired external
- **R** = 208–240 Vac/Vdc, no LCS
- **S** = 208–240 Vac/Vdc, spring release LCS
- **T** = 208–240 Vac/Vdc, LCS wired external
- **L** = 24 Vdc, no LCS
- **P** = 24 Vdc, spring release LCS
- **Q** = 24 Vdc, LCS wired external
- **H** = 48 Vdc, no LCS
- **J** = 48 Vdc, spring release LCS
- **K** = 48 Vdc, LCS wired external
- **1** = 60 Vdc, no LCS
- **2** = 60 Vdc, spring release LCS
- **3** = 60 Vdc, LCS wired external

Series NRX Type NF-Frame Circuit Breaker (Exclusionary Rules Apply), continued

N S S6 08 3 W 52 8 A B A N 4 X N D X

UVR, Second Shunt Trip

N	None
A	110–125 Vac/Vdc UVR
R	220–250 Vac/Vdc UVR
L	24 Vdc UVR
H	48 Vdc UVR
S	60 Vdc UVR
G	32 Vdc UVR
1	110–127 Vac/Vdc second shunt trip
2	208–240 Vac/Vdc second shunt trip
4	24 Vdc second shunt trip
8	48 Vdc second shunt trip
9	60 Vdc second shunt trip

Auxiliary, Switches, Label Language

E	No auxiliary switches, no label (parent)
2	2 Form C, English
4	4 Form C, English

	Trip Indicator and Bell Alarm	OTS	Secondary Terminal Blocks
N	None	None	Per breaker options
X	Trip indicator	None	Per breaker options
Z	Trip indicator	2 Form C	Per breaker options
M	Interlock trip indicator	None	Per breaker options
Y	Interlock trip indicator	2 Form C	Per breaker options
1	None	None	Full complement
2	Trip indicator	None	Full complement
3	Trip indicator	2 Form C	Full complement
4	Interlock trip indicator	None	Full complement
5	Interlock trip indicator	2 Form C	Full complement

	Padlock Provisions	Key Lock Provisions	Operations Counter
N	No	None	No
A	No	—	Provided
B	Yes (plastic/plastic)	—	No
C	Yes (plastic/plastic)	—	Provided

Future Use

X	All product

Drawout Breaker Shipping, Fixed Breaker Terminals (Door Frame Kit ships as standard unless noted otherwise)

D	Drawout (or parent) breaker shipping alone, without door frame kit
C	Drawout breaker in cassette, no shutters, no terminals
1	Drawout breaker in cassette, no shutters, short vertical/horizontal
2	Drawout breaker in cassette, no shutters, long vertical/horizontal
4	Drawout breaker in cassette, with shutters, short vertical/horizontal
5	Drawout breaker in cassette, with shutters, long vertical/horizontal
9	Drawout breaker in cassette, no shutters, no terminals
A	Fixed terminal adapters for rear connect, short vertical/horizontal
E	Fixed terminal adapters for rear connect, long vertical/horizontal
F	Fixed terminal adapters for rear connect, with mounting feet, short vertical/horizontal
H	Fixed terminal adapters for rear connect, with mounting feet, long vertical/horizontal

Series NRX Type NF-Frame Cassette

NX 12 3 F A B N S N N N C

Cassette Family and Breaker Frame

NS	UL 1066 N-Frame
NX	UL 489 N-Frame
NE	IEC N-Frame

Continuous Ampere Range

08	800 (UL 1066)
12	800–1200 (UL 489)
16	630–1600 (IEC)

Poles and Phasing (Facing Front of Breaker)

3	Three-pole ABC
4	Four-pole NABC

Load Terminal Connections

F	With flat tapped pads only
G	With vertical/horizontal bus adapter kit (short style)
H	With front-connected kit
N	No cassette stabs (interunit only)

Arc Hood

A	Arc hood installed (default)

Door Frame Gasket and Rejection Kits

B	Door kit included (default), with rejection kit
D	Door kit included, no rejection kit
R	Not included, with rejection kit
N	Not included, with rejection kit

TOC Switches (Truck Operated Cell)

N	Not included (default)

Shutters

N	Not included (default)
S	Included

Secondary Contact Terminals Installed

N	None
B	Breaker defined, when breaker ships in cassette
F	Full complement
C	Common options when cassette ships alone

Future

N	None

Future

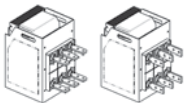
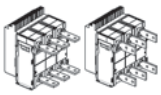
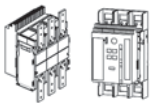
N	None

Cassette Shipping

C	Cassette only
B	Breaker shipped in cassette

Technical Data and Specifications

Mounting and Load Connection Configurations

Breaker Type	Breaker Mechanism	Standard Bus Connection Provisions	Rear-Connected Horizontal/Vertical Adapter Kit With and Without Cover (Kits Shipped Unassembled)	Front-Connected Horizontal/Vertical Adapter Kit With and Without Cover (Kits Shipped Unassembled)	Cable-Connected Cable Terminals With Cover
Drawout Breaker	Stored energy	Finger clusters	—	—	—
Cassette	—	Rear-connected pre-drilled bus pads			—
Fixed	Stored energy	Rear-connected pre-drilled bus pads			

UL 1066 Ratings

Description	Rating
Continuous current rating (amperes)	800
Short-Circuit Rating (kA)	
254 Vac	85
508 Vac	65
635 Vac	35
Short-time withstand (kA) ①	42

UL 489 Ratings

Description	Rating	Rating
Continuous current rating (amperes)	800	1200
Short-Circuit Rating (kA)		
240 Vac	85	85
480 Vac	65	65
600 Vac	42	42
Short-time withstand (kA)	42	42

IEC 60947-2 Ratings

Description	Rating		Rating		Rating	
Continuous current rating (amperes)	630 and 800		1000 and 1250		1600	
Short-circuit rating (kA)	Icu	Ics	Icu	Ics	Icu	Ics
240/254 Vac	85	50	85	50	85	50
415/435 Vac	65	50	65	50	65	50
690/725 Vac	42	42	42	42	42	42
Short-time withstand = Icw (kA)	42	42	42	42	42	42

Note

① 35 kAIC short-time withstand at 635V level only. All other voltages 42 kAIC short-time withstand.

Accessory Ratings

Shunt Trip

Control Voltages	Frequency	Operational Voltage Range 70–110%	Inrush/Continuous Power Consumption (VA)	Opening Time (ms)
24	DC	17–26	500/5	25
48	DC	34–53	530/5	25
110–127	50–60 Hz	77–140	540/5	25
110–125	DC	77–138	540/5	25
208–240	50–60 Hz	146–264	500/5	25
220–250	DC	154–275	515/5	25

UVR

Control Voltages	Frequency	Operational Voltage Range 85–110%	Dropout Volts 35–60%	Inrush/Continuous Power Consumption (VA)	Opening Time (ms)
24	DC	20–26	8–14	500/5	50
32	DC	27–35	11–19	620/5	50
48	DC	41–53	17–29	850/5	50
110–127	50–60 Hz	94–140	44–94	890/5	50
110–125	DC	94–138	44–94	890/5	50
208–240	50–60 Hz	177–264	84–125	910/5	50
220–250	DC	187–275	88–132	910/5	50
380–415	AC	323–457	145–228	960/5	50
480	AC	408–528	168–288	800/8	50
600	AC	510–660	210–360	800/12	50

Spring Release

Control Voltages	Frequency	Operational Voltage Range 70–110%	Inrush Power Consumption (VA)	Closing Time (ms)
24	DC	17–26	500	25
48	DC	34–53	530	25
110–127	50–60 Hz	77–140	540	25
110–125	DC	77–138	540	25
208–240	50–60 Hz	146–264	500	25
220–250	DC	154–275	515	25

OCT/OTS

Control Voltages	Frequency	Contact Rating (Amperes)
250	50–60 Hz	10
125	DC	0.5
250	DC	0.25

Auxiliary Switch

Control Voltages	Frequency	Contact Rating (Amperes)
250	50–60 Hz	10
125	DC	0.5
250	DC	0.25

Breaker Position/Continuity

Breaker Position	Continuity Between Red and Black Lead Pairs	Continuity Between Blue and Black Lead Pairs
Open	NO	45 and 43
	NO	46 and 47
	NO	51 and 49
	NO	52 and 53
Closed	44 and 43	NO
	48 and 47	NO
	50 and 49	NO
	54 and 53	NO

Motor Operator

Control Voltages	Frequency	Operational Voltage Range 85–110%	Running Current (A)	Typical Inrush Current	Power Consumption (VA)	Maximum Charging Time (Sec)
24	DC	20–26	5	500%	150	3
48	DC	41–53	3	500%	150	3
110–127	50–60 Hz	94–140	2	300%	280	3
110–125	DC	94–138	1	500%	150	3
208–240	50–60 Hz	177–264	1	1000%	280	4
220–250	DC	187–275	1	1000%	280	4

Control Voltages and Currents

Control Voltages	24 Vdc	48 Vdc	110–125 Vdc	110–127 Vac	220–250 Vdc	208–240 Vac
Current						
Close current (inrush)	21	11	5	5	2	2
Shunt trip current (ST)—(inrush/continuous)	21 / .2	11 / .1	5 / .04	5 / .04	2 / .02	2 / .02
Charge motor current—(inrush/continuous)	TBD	TBD	5 / 1	6 / 2	10 / 1	10 / 1
Operating Voltage Rating						
Close	17–26	34–53	77–138	77–140	154–275	146–264
Trip	17–26	34–53	77–138	77–140	154–275	146–264
Charge	20–26	41–53	94–138	94–140	187–275	177–264

Dimensions

Approximate Dimensions in Inches (mm)

Series NRX Three-Pole Drawout with Cassette

Height	Width	Depth	Lbs (kg)
14.18 (360.2)	10.02 (254.5)	10.68 (271.3)	85.00 (38.59)

Fixed Circuit Breaker and Drawout with Cassette

Breaker Type	Height	Width	Depth	Lbs (kg)
Fixed				
Three-pole	13.18 (334.8)	8.25 (209.6)	7.15 (181.6)	33.58 (15.23)
Four-pole	13.18 (334.8)	11.00 (279.4)	7.15 (181.6)	44.40 (20.14)
Drawout with Cassette				
Three-pole	14.18 (360.2)	10.02 (254.5)	10.69 (271.5)	85.20 (38.65)
Four-pole	14.18 (360.2)	12.69 (322.3)	10.69 (271.5)	104.00 (47.17)

Type VCP-W/VCP-T Medium Voltage Vacuum Circuit Breaker

Contents

Description	*Page*
Low Voltage Power Circuit Breakers	**V4-T3-2**
Magnum DS Low Voltage Power Circuit Breakers	**V4-T3-6**
Magnum MDSL Current Limiting Power Circuit Breaker	**V4-T3-12**
Magnum SB Low Voltage Insulated Case Circuit Breakers	**V4-T3-15**
Magnum IEC Rated Air Circuit Breakers	**V4-T3-20**
Magnum DC (Direct Current) Low Voltage Switches	**V4-T3-30**
Series NRX Low Voltage Power Circuit Breakers	**V4-T3-32**
Medium Voltage Circuit Breakers	
Features, Benefits and Functions	**V4-T3-40**
Standards and Certifications	**V4-T3-40**
Product Selection	**V4-T3-41**
Technical Data and Specifications	**V4-T3-41**

3

Medium Voltage Circuit Breakers

Product Description

Breakers and structures for switchgear assemblies:

ANSI

- VCP-W medium voltage circuit breakers
  - 5/15 kV VCP-W (K>1, K=1, narrow design, extra-capability and generator circuit breakers available)
  - 27 kV and 38 kV (extra-capability circuit breakers available)
  - Ground and test devices
  - Dummy elements
- VCP-T medium voltage circuit breakers
  - 5/15 kV VCP-T (capacitor switching and magnetic actuated circuit breakers available)
  - Ground and test devices
  - Dummy elements

IEC

- T-VAC medium voltage circuit breakers
  - 5/15 kV VCP-T (capacitor switching circuit breakers available)
  - Ground and test devices
  - Dummy elements
- VCP-W IEC medium voltage circuit breakers
  - 3.6/7.2/12/17.5 kV
  - 24 kV

OEM Structures

- Metal-clad, compartmented design
- Barebones
- Power modules
- Mini modules
- Breaker compartment kits

Application Description

Eaton's medium voltage circuit breakers offer the latest in vacuum technology, providing superior control and protection of medium voltage power equipment in utility, industrial, commercial, mining and marine installations. Built in a state-of-the-art ISO® 9002 certified facility, they meet and exceed all ANSI and IEC requirements. Available in drawout configurations, Eaton's vacuum circuit breakers are a result of our ongoing commitment to research and development, which have resulted in significant breakthrough technologies. Each breaker is provided with its unique Quality Assurance Certificate that documents all tests and inspections performed.

Features, Benefits and Functions

VCP-W Standard Features

- Eaton's maintenance-free vacuum interrupters with visual contact erosion indicator
- Non-sliding/non-rolling V-Flex™ current transfer system
- Glass polyester insulation
- Cycloaliphatic epoxy insulation (optional with Type VCPW-SE breakers) for 27 kV and 38 kV breakers
- Front-accessible operating mechanism
- Electrically operated trip-free, spring stored energy mechanism
- Interlocks that prevent moving a closed circuit breaker into or out of the connected position
- Closing springs automatically discharge before moving the circuit breaker into or out of the enclosure
- Provisions for manual charging of closing springs
- Manual close and trip pushbuttons
- Operations counter
- Closing spring charged/ discharged indicator
- Circuit breaker Open/ Closed indicator
- Auxiliary switch with 2A/3B for DC and 1A/3B for AC spare contacts
- Spring charging motor, close coil, trip coil, latch check switch and anti-pump relay

VCP-T Standard Features

- Small without compromise—significantly smaller and lighter than comparable breakers
- Grounded steel barrier between mechanism and primary conductors
- Spring loaded, silver-plated primary disconnects (drawout breaker)
- Silver-plated primary connections (fixed circuit breaker)
- Manual charging of closing springs (includes shunt trip)
- Integral spring charging handle
- Auxiliary switch (5a and 5b contacts)
- Mechanical operations counter
- 24, 48, 125 and 250 Vdc, 120 and 240 Vac control
- Shunt trip
- ON and OFF pushbuttons
- Integral lifting hooks
- Through- or behind-door operation
- Identified/dedicated secondaries
- Secondary umbilical cord (drawout circuit breaker)
- Secondary disconnect block (fixed circuit breaker)
- Two-step stored energy mechanism
- O–0.3s–CO–15s–CO
- Anti-pump
- Trip free
- Latch check switch
- Visible contact erosion indicator
- Visible contact wipe indicator
- Disconnect, Test and Connect (drawout circuit breaker)
- Integral levering mechanism (drawout circuit breaker)
- Field-installable accessories

Standards and Certifications

- Designed, tested and certified in accordance with ANSI and IEC standards
- Applicable ANSI standards C37.04-1979 or 1999, C37.09-1979 or 1999, C37.06-2000 and C37.013
- Internal arc resistance tested to IEC 298, Appendix AA, 25 kA for 1 second
- Drawout circuit breaker fully qualified to IEC 56 by testing inside the IEC 298 switchgear cubicle
- IEEE C37.013 and amendment C37.013a-2007

Product Selection

Please contact your Eaton sales representative for additional product information and to review your specific application and required product configuration.

Technical Data and Specifications

ANSI Standards

ANSI Standard Ratings—VCP-W Vacuum Circuit Breaker Types Rated on Symmetrical Current Rating Basis—Standard Circuit Breakers ①

	Circuit Breaker Type								
Description	**50 VCP-WND250**	**50 VCP-W250**	**50 VCP-W350**	**50 VCP-W500 (63 kA)**	**75 VCP-W500**	**150 VCP-W500**	**150 VCP-W750**	**150 VCP-W1000**	**150 VCP-W1500 (63 kA)**
Identification									
Nominal voltage class kV	4.16	4.16	4.16	4.16	7.2	13.8	13.8	13.8	13.8
Nominal three-phase MVA class	250	250	350	—	500	500	750	1000	—
Rated Values									
Voltage Maximum voltage E kV rms	4.76	4.76	4.76	4.76	8.25	15	15	15	15
Voltage range factor K ②	1.24	1.24	1.19	1.00	1.25	1.30	1.30	1.30	1.00
Insulation Level Withstand test voltage									
Power frequency (1 min.) kV rms	19	19	19	19	36	36	36	36	36
Impulse kV peak	60	60	60	60	95	95	95	95	95
Current Continuous current at 60 Hz amperes	1200	1200	1200	1200	1200	1200	1200	1200	1200
		2000	2000	2000	2000	2000	2000	2000	2000
		3000	3000	3000	3000	3000	3000	3000	3000
Short-circuit current (at rated max. kV) I kA rms	29	29	41	63	33	18	28	37	63
Interrupting time cycles	5	5	5	5	5	5	5	5	5
Permissible tripping delay Y seconds	2	2	2	2	2	2	2	2	2
Maximum voltage divided by K E/K kV rms ②	3.85	3.85	4.0	4.76	6.6	11.5	11.5	11.5	15.0
Current Values Maximum symmetrical interrupting capability Short-time current K x 1 kA rms ②	36	36	49	63	41	23	36	48	63
Closing and latching capability kA peak	97	97	132	170	111	62	97	130	170
Closing and latching momentary capability	58	58	78	101	66	37	58	77	101
Weight Lbs (kg) 1200A	345 (157)	350 (159)	460 (209)	525 (238)	375 (170)	350 (159)	350 (159)	460 (209)	525 (238)
2000A	345 (157)	410 (186)	490 (223)	530 (241)	410 (186)	410 (186)	410 (186)	490 (223)	530 (241)
3000A	345 (157)	525 (238)	525 (238)	550 (250)	525 (238)	525 (238)	525 (238)	525 (238)	550 (250)

Notes

① Applicable ANSI Standards C37.04-1999, C37.06-2000 (including both K >1 and K =1 ratings), and C37.09-1999.

② See *Consulting Application Guide* for further information.

ANSI Standard Ratings—VCP-W Vacuum Circuit Breaker Types Rated on Symmetrical Current Rating Basis—Extra Capability Breakers ①

Description	Circuit Breaker Type 50 VCP-W25C	50 VCP-W40C	50 VCP-W50C	50 VCP-W63C	75 VCP-W50C	150 VCP-W25C	150 VCP-W40C	150 VCP-W50C	150 VCP-W63C
Identification									
Nominal voltage class kV	4.16	4.16	4.16	4.16	7.2	13.8	13.8	13.8	13.8
Nominal three-phase MVA class	—	—	—	—	—	—	—	—	—
Rated Values									
Voltage Maximum voltage E kV rms	5.95	5.95	5.95	5.95	10.3	17.5	17.5	17.5	15.0
Voltage range factor K ②	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Insulation Level Withstand test voltage									
Power frequency (1 min.) kV rms	24	24	24	24	42	42	42	42	42
Impulse kV peak	75	75	75	75	95	95	95	95	95
Current Continuous current at 60 Hz amperes	1200	1200	1200	1200	1200	1200	1200	1200	1200
	2000	2000	2000	2000	2000	2000	2000	2000	2000
	3000	3000	3000	3000	3000	3000	3000	3000	3000
Short-circuit current (at rated max. kV) I kA rms	25	40	50	63	50	25	40	50	63
Interrupting time cycles	3	3	3	3	3	3	3	3	3
Permissible tripping delay Y seconds	2 ③	2 ③	2 ③	2 ③	2 ③	2 ③	2 ③	2 ③	2 ③
Maximum voltage divided by K E/K kV rms ②	5.95	5.95	5.95	5.95	10.3	17.5	17.5	17.5	15.0
Current Values Maximum symmetrical interrupting capability Short-time current K x 1 kA rms ②	25	40	50	63	50	25	40	50	63
Closing and latching capability kA peak	97	139	139	175	139	97	139	139	175
Closing and latching momentary capability	58	83	83	104	83	58	83	83	104
Weight Lbs (kg) 1200A	350 (159)	460 (209)	525 (238)	350 (159)	460 (209)	350 (159)	350 (159)	460 (209)	525 (238)
2000A	410 (186)	490 (223)	530 (241)	410 (186)	490 (223)	410 (186)	410 (186)	490 (223)	530 (241)
3000A	525 (238)	525 (238)	550 (250)	525 (238)	525 (238)	525 (238)	525 (238)	525 (238)	550 (250)

Notes

① Applicable ANSI Standards C37.04-1999, C37.06-2000 (including both K >1 and K =1 ratings), and C37.09-1999.

② See *Consulting Application Guide* for further information.

③ Tested for 3 seconds.

ANSI Standard Ratings—VCP-W Vacuum Circuit Breaker Types Rated on Symmetrical Current Rating Basis—Generator Breakers (to ANSI C37.013) ①

Description	Circuit Breaker Type 50 VCP-WG50	50 VCP-WG63	50 VCP-WG75	150 VCP-WG50	150 VCP-WG63	150 VCP-WG75
Identification						
Nominal voltage class kV	4.16	4.16	4.16	13.8	13.8	13.8
Nominal three-phase MVA class	—	—	—	—	—	—
Rated Values						
Voltage						
Maximum voltage E kV rms	4.76	4.76	4.76	15.0	15.0	15.0
Voltage range factor K ②	1.00	1.00	1.00	1.00	1.00	1.00
Insulation Level						
Withstand test voltage						
Power frequency (1 min.) kV rms	19	19	19	36	36	36
Impulse kV peak	60	60	60	95	95	95
Current						
Continuous current at 60 Hz amperes	1200	1200	1200	1200	1200	1200
	2000	2000	2000	2000	2000	2000
	3000	3000	3000	3000	3000	3000
	4000	4000	4000	4000	4000	4000
Short-circuit current (at rated max. kV) kA rms	50	63	75	50	63	75
Interrupting time cycles						
1200A	3	3	3	3	3	3
2000A	3	3	3	3	3	3
3000A	3	3	3	3	3	3
4000A	5	5	5	5	5	5
Permissible tripping delay Y seconds						
1200A	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3
2000A	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3
3000A	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3	1 and 3
4000A	1	1	1	1	1	1
Maximum voltage divided by K E/K kV rms ②	4.76	4.76	4.76	15.0	15.0	15.0
Current Values						
Maximum symmetrical interrupting capability						
Short-time current K x 1 kA rms ②	50	63	75	50	63	75
Closing and latching capability kA peak	137	173	206	137	173	206
Closing and latching momentary capability	82	103	123	82	103	123
Weight Lbs (kg)						
1200A	525 (238)	525 (238)	926 (419)	525 (238)	525 (238)	926 (419)
2000A	530 (241)	530 (241)	936 (424)	530 (241)	530 (241)	936 (424)
3000A	550 (250)	550 (250)	946 (429)	550 (250)	550 (250)	946 (429)
4000A	956 (433)	956 (433)	956 (433)	956 (433)	956 (433)	956 (433)

Notes

① Applicable ANSI Standards C37.04-1999, C37.06-2000 (including both K >1 and K =1 ratings), C37.09-1999 and C37.013 (including C37.013a-2007).

② See *Consulting Application Guide* for further information.

Available Type VCP-W Vacuum Circuit Breakers Rated on Symmetrical Current Basis Per ANSI Standards (Rated K=1)

	Drawout Circuit Breaker Type									
Identification	**50 VCP-W25**	**50 VCP-W40**	**50 VCP-W50**	**50 VCP-W63**	**75 VCP-W40**	**75 VCP-W50**	**150 VCP-W25**	**150 VCP-W40**	**150 VCP-W50**	**150 VCP-W63**
Rated Values										
Maximum voltage (V) kV rms	4.76	4.76	4.76	4.76	8.25	8.25	15	15	15	15
Power frequency Hz ①	60	60	60	60	60	60	60	60	60	60
Insulation Level Power frequency withstand voltage (1 min.) kV rms	19	19	19	19	36	36	36	36	36	36
Lightning impulse withstand voltage (1.2 x 50 µs) kV peak	60	60	60	60	95	95	95	95	95	95
Continuous current A rms ②	1200	1200	1200	1200	1200	1200	1200 ⑩	1200	1200	1200 ⑩
	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000 ⑩
	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000 ⑩
Short-Circuit Ratings (Reference C37.04-1999 and C37.06-2009 except as noted ⑩) Symmetrical interrupting current (I) kA rms sym ③	25	40	50	63	40	50	25	40	50	63
DC component (% DC) ④	50	50	44	55	50	44	50	50	44	55
Asymmetrical interrupting current (I_t) kA rms asym total ⑤	31	49	59	80	49	59	31	49	59	80
Closing and latching current (2.6 x I) kA peak	65	104	130	164	104	130	65	104	130	164
Short-time withstand current rms ⑥	25	40	50	63	40	50	25	40	50	63
Transient Recovery Voltage parameters are based on TD-4 Peak voltage (E_2) = (u_c) (kV peak)	8.2	8.2	8.2	8.2	14	14	28 ⑩, 25.7	25.7	25.7	28 ⑩
Time to peak ($T_2 = t_3$ x 1.137) (µsec)	50	50	50	50	59	59	75	75	75	75
TRV rise time (t_3) (µsec)	44	44	44	44	52	52	66	66	66	66
RRRV = u_c/t_3 (kV/µsec) ⑦	0.19	0.19	0.19	0.19	0.27	0.27	0.42, 0.39	0.39	0.39	0.42
Interrupting time ms	50	50	50	50	50	50	50	50	50	50
Cycles (60 Hz)	3	3	3	3	3	3	3	3	3	3
Operating duty (duty cycle)	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO	O–0.3s–CO–3m–CO
Mechanical endurance no-load operations ⑧⑨	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

Notes

① All circuit breakers are tested at 60 Hz, however, they can also be applied at 50 Hz with no de-rating.

② 4000A fan cooled rating is available for 3000A circuit breakers.

③ Because the voltage range factor K=1, the short-time withstand current and the maximum symmetrical interrupting current are equal to the rated symmetrical interrupting current.

④ Based on the standard DC time constant of 45 ms (corresponding to X/R of 17 for 60 Hz) and the minimum contact parting time as determined from the minimum opening time plus the assumed minimum relay time of 1/2 cycle (8.33 ms for 60 Hz).

⑤ The asymmetrical interrupting current, I total, is given by (I_t) = I x Sqrt (1 + 2 x %DC x %DC) kA rms asym total.

⑥ Duration of short-time current and maximum permissible tripping delay are both 2 seconds for all circuit breakers listed in this table, as required in C37.04-1999, C37.06-2000 and C37.06-2009.

⑦ RRRV can also be calculated as = 1.137 x E_2/T_2.

⑧ Each operation consists of one closing plus one opening.

⑨ All 40 and 50 kA circuit breakers exceed required 5000 no-load operations; all 63 kA circuit breakers exceed the required 2000 no-load ANSI operations.

⑩ These circuit breakers were tested to the preferred TRV ratings specified in C37.06-2000.

Available Type VCP-W Vacuum Circuit Breakers Rated on Symmetrical Current Basis Per ANSI Standards (Rated K=1), continued

Identification	Drawout Circuit Breaker Type 50 VCP-W25	50 VCP-W40	50 VCP-W50	50 VCP-W63	75 VCP-W40	75 VCP-W50	150 VCP-W25	150 VCP-W40	150 VCP-W50	150 VCP-W63
Capacitance Current Switching Capability (Reference C37.04a-2003, C37.06-2009 and C37.09a-2005)										
Cable-charging current										
Class	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2
A rms	3–10	3–10	3–10	7.5–25	7.5–25	7.5–25	7.5–25	7.5–25	7.5–25	7.5–25
Isolated shunt capacitor bank current										
Class	C2	C2	C2	C2	C2	C2	C2, C2, C1	C2, C2, C1	C2, C2, C1	C2
A rms										
1200A	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630
2000A	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000
3000A	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600
Back-to-Back Capacitor Switching										
Capacitor bank current										
Class	C2	C2	C2	C2	C2	C2	C2, C2, C1	C2, C2, C1	C2, C2, C1	C2
A rms										
1200A	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630	75–630
2000A	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000	75–1000
3000A	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600	75–1600
Inrush current kA peak	6	6	6	6	6	6	6	6	6	6
Inrush frequency kHz										
1200A	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
2000A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
3000A	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Out-of-Phase Switching										
Voltage = 1.44 x V (kV rms)	7	7	7	7	12	12	22	22	22	22
Current = 0.25 x I (kA rms)	6.3	10	12.5	15.8	10	12.5	6.3	10	12.5	15.8

VCP-W Vacuum Breaker Types Rated on Symmetrical Current Rating Basis ①

	Circuit Breaker Type							
	270 VCP-W750	**270 VCP-W1000**	**270 VCP-W1250**	**270 VCP-W1600**	**270 VCP-W2000**	**270 VCP-W25C**	**270 VCP-W32C**	**270 VCP-W40C**
Identification								
Nominal voltage class kV	27	27	27	27	27	27	27	27
Nominal three-phase MVA class	750	1000	1250	1600	2000	—	—	—
Rated Values								
Voltage								
Maximum voltage E kV rms	27 ②	27 ②	27 ②	27 ②	27 ②	27	27	27
Voltage range factor K ③	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Insulation Level Withstand test voltage								
Power frequency (1 min.) kV rms	60	60	60	60	60	60	60	60
Impulse kV peak	125	125	125	125	125	125	125	125
Current								
Continuous current at 60 Hz amperes	600	600	600	1200	1200	1200	1200	1200
	1200	1200	1200	2000	2000	1600	1600	1600
	2000	2000	2000	—	—	—	—	—
Short-circuit current (at rated maximum kV) ④⑤	16	22	25	25	40	25 ⑦	31.5 ⑧	40 ⑨
Interrupting time ms (cycles)	83 (5) ⑥	83 (5) ⑥	83 (5) ⑥	83 (5) ⑥	83 (5) ⑥	50 (3)	50 (3)	50 (3)
Maximum permissible tripping delay Y seconds	2	2	2	2	2	2.5	1.6	1.0
Transient recovery voltage E_2 kV peak	51	51	51	51	51	50	50	50
T_2 µs	105	105	105	105	105	50	50	50
Current Values Closing and latching capability (2.6 K times rated short-circuit current) kA peak	43	60	68	85	106	85	100	112
Capacitor switching cable charging amperes	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
Weight Lbs (kg)								
600A	460 (209)	460 (209)	460 (209)	545 (247)	545 (247)	545 (247)	545 (247)	545 (247)
1200A	480 (218)	480 (218)	480 (218)	560 (254)	600 (272)	560 (254)	560 (254)	560 (254)
2000A	500 (227)	500 (227)	500 (227)	—	—	—	—	—

Notes

① CESI tested to applicable ANSI standards C37.04, C37.09 and C37.06. Consult Eaton for CESI copies of test reports on file. Operating duty cycle CO-15 seconds-CO. Operating time values: Opening 33–55 ms, closing 50–60 ms and reclosing 18 cycles (300 ms).

② Tested at 28.5 kV.

③ K = 1.0, therefore E = E/K and I = KI.

④ Also maximum interruption rating and short-time current rating.

⑤ Duration of short-time current = 3 seconds, except as noted in footnotes 7, 8 and 9.

⑥ Optional interrupting time of 50 ms (3 cycles) is available.

⑦ Duration of short-time current = 2.5 seconds.

⑧ Duration of short-time current = 1.6 seconds.

⑨ Duration of short-time current = 1 second.

Type VCP-W Vacuum Circuit Breaker Ratings

Type VCP-W Ratings on Symmetrical Current Rating Basis ①②

Identification	Circuit Breaker Type 380 VCP-W 6 and 380 VCP-WR 16	380 VCP-W 25 and 380 VCP-WR 25	380 VCP-W 32 and 380 VCP-WR 32	380 VCP-W 21 and 380 VCP-WR 21	380 VCP-W 40 and 380 VCP-WR 40
Rated Values					
Voltage					
Nominal voltage class kV rms	34.5	34.5	34.5	34.5	34.5
Maximum voltage V kV rms	38	38	38	38	38
Voltage range factor K ③	1	1	1	1.65 ⑧	1
V/K ③ kV rms	38	38	38	23 ⑧	38
Insulation Level Withstand Test					
Power frequency (1 minute) kV rms	80	80	80	80	80
Lightning impulse 1.2 x 50 ④ kV peak	170	170	170	170	170
Current					
Continuous current at 60 Hz ⑤ A rms	600	600	600	1200	1200
	1200	1200	1200	2000	2000
	1600	1600	1600	3000FC	3000FC
	2000	2000	2000	2500	2500
	—	—	3000FC	—	—
	—	—	2500	—	—
Short-Circuit Current					
Sym. interrupting at V (Isc) kA rms	16	25	31.5	21	40
% DC component (Idc)	47	47	47	47	47
Asym. factor S (ref.)	1.2	1.2	1.2	1.2	1.2
Asym. interrupting (I_t) kA rms total	19.2	30.0	37.8	39.5	48.0
Maximum asym. interrupting at V/K (KxIsc) ③ kA rms	16	25	31.5	35 ⑧	40
Maximum asym. interrupting at V/K (SxKxIsc) ③ kA rms total	19.3	30.0	37.8	42.0	48.0
Closing and latching capability kA peak	43	68	85	95	107
Momentary current withstand capability kA rms total	26	40	50	56	63
Short-time current kA rms	16	25	31.5	35	40
Duration of short-time current s	3	3	3	3	3
Operating duty (duty cycle)	⑨⑩	⑨⑩	⑨⑩ (2500 only ⑨⑪)	⑨⑩ (2500 only ⑨⑪)	⑨⑪
Rated reclosing factor (R) %	100	100	100 (2500 only 0%)	100 (2500 only 0%)	100
Interrupting time ⑥ rms	83	83	83	83	83
Cycle	5	5	5	5	5
Maximum permissible tripping delay sec.	2	2	2	2	2
Transient recovery voltage (RRRV) kV/µs	0.6	0.6	0.6	0.6	0.6
Mechanical endurance ⑦	2000	2000	2000	2000	2000

Notes

① KEMA tested to applicable ANSI standards C37.04-1979, C37.09-1979 and C37.06-1979 (operating duty sequence CO–15s–CO). Typical operating time values: operating 45 ms, closing 75 ms and reclosing 300 ms (18 cycles).
② The standard breaker is not rated for capacitor switching. If you require capacitor switching, please refer to the "C" breakers.
③ K = 1.0, therefore E = E/K and I = KI. Refer to the *Consulting Application Guide* for more information.
④ The ANSI C37.06 standard requires 150 kV BIL. If higher BIL levels are required, please refer to the "C" breakers.
⑤ For forced air cooled fixed breaker applications, consult Eaton.
⑥ If you require 50 ms (3 cycle) interrupting time, please refer to the "C" breakers.
⑦ No-load operations.
⑧ At 23 kV rms (rated maximum voltage/K). Rated maximum symmetrical interrupting capability = 35 kA rms (K x 1).
⑨ CO–15s–CO.
⑩ Rated and tested also for rapid reclosing capability O–0.3s–CO.
⑪ Not rated for rapid reclosing.

Type VCP-WC Vacuum Circuit Breaker Ratings

Type VCP-WC Ratings on Symmetrical Current Rating Basis ①②

Identification	Drawout Circuit Breaker Type 380 VCP-W 16C and 380 VCP-WR 16C	380 VCP-W 25C and 380 VCP-WR 25C	380 VCP-W 32C and 380 VCP-WR 32C	380 VCP-W 21C and 380 VCP-WR 21C	380 VCP-W 40C and 380 VCP-WR 40C
Rated Values					
Voltage					
Nominal voltage class kV rms	34.5	34.5	34.5	34.5	34.5
Maximum voltage V kV rms	38	38	38	38	38
Voltage range factor K ③	1	1	1	1.65 ⑧	1
V/K ③ kV rms	38	38	38	23 ⑧	38
Insulation Level Withstand Test					
Power frequency (1 minute) kV rms	80	80	80	80	80
Lightning impulse 1.2 x 50 µs ④ kV peak	170	170	170	170	170
Current					
Continuous current at 60 Hz ⑤ A rms	600	600	600	1200	1200
	1200	1200	1200	2000	2000
	1600	1600	1600	3000FC	3000FC
	2000	2000	2000	2500	2500
	—	—	3000FC	—	—
	—	—	2500	—	—
Short-Circuit Current					
Sym. interrupting at V (Isc) kA rms	16	25	33.1	21	40
% DC component (Idc)	75	65	57	52	63
Asym. factor S (ref.)	1.46	1.36	1.3	1.24	1.34
Asym. interrupting (I_t) kA rms total	23.3	34.0	42.5	26.1	53.5
Maximum sym. interrupting at V/K (KxIsc) ③ kA rms	16	25	33.1	35 ⑧	40
Maximum asym. interrupting at V/K (SxKxIsc) ③ kA rms total	23.3	34.0	42.5	43.4	53.5
Closing and latching capability kA peak	50	75	91	102	107
Momentary current withstand capability kA rms total	30	44	54	60	65
Short-time current kA rms	16	25	31.5	35	40
Duration of short-time current s	3.09	3.09	3.09	3.21	3.04
Operating duty (duty cycle)	⑨⑩	⑨⑩	⑨⑩ (2500A ⑪)	⑨⑩ (2500A ⑪)	⑨⑪
Rapid reclosing factor (R) %	100	100	100 (2500A N/A)	100 (2500A N/A)	—
Interrupting time ⑥ rms	50	50	50	50	50
Cycles	3	3	3	3	3
Maximum permissible tripping delay sec.	2	2	2	2	2
Transient recovery voltage (RRRV) kV/µs	0.7	0.7	0.7	0.7	—
	1.3	1.3	0.7	1.3	—
	—	—	0.7	1.3	—
	—	—	1.3	0.7	—
	—	—	1.3	—	—
	—	—	0.7	—	—

Notes

① KEMA tested to applicable ANSI standards C37.04-1979, C37.09-1979 and C37.06-1979 (operating duty sequence CO–15s–CO). Typical operating time values: operating 45 ms, closing 75 ms and reclosing 300 ms (18 cycles).

② The standard breaker is not rated for capacitor switching. If you require capacitor switching, please refer to the "C" breakers.

③ K = 1.0, therefore E = E/K and I = KI. Refer to the *Consulting Application Guide* for more information.

④ The ANSI C37.06 standard requires 150 kV BIL. If higher BIL levels are required, please refer to the "C" breakers.

⑤ For forced air cooled fixed breaker applications, consult Eaton.

⑥ If you require 50 ms (3 cycle) interrupting time, please refer to the "C" breakers.

⑦ No-load operations.

⑧ At 23 kV rms (rated maximum voltage/K). Rated maximum symmetrical interrupting capability = 35 kA rms (K x 1).

⑨ CO–15s–CO.

⑩ Rated and tested also for rapid reclosing capability O–0.3s–CO.

⑪ Not rated for rapid reclosing.

Type VCP-WC Vacuum Circuit Breaker Ratings

Type VCP-WC Ratings on Symmetrical Current Rating Basis, continued[1][2]

Identification	Drawout Circuit Breaker Type 380 VCP-W 16C and 380 VCP-WR 16C	380 VCP-W 25C and 380 VCP-WR 25C	380 VCP-W 32C and 380 VCP-WR 32C	380 VCP-W 21C and 380 VCP-WR 21C	380 VCP-W 40C and 380 VCP-WR 40C
Capacitor Switching Ratings					
Definite Purpose					
Overhead line current A rms	5	5	5 (2500A N/A)	5 (2500A N/A)	—
Isolated shunt capacitor bank current A rms	250	250	250	250	—
	250 and 1000 (2000A)	250 and 1000 (2000A)	250 and 1000 (2000A and 3000FC) (2500 N/A)	250 and 1000 (2000A and 3000FC) (2500 N/A)	—
Definite Purpose—Back-to-Back Capacitor Switching					
Cable charging current A rms	56	56	53	53	53
Capacitor bank current A rms	250	250	250	250	—
	250 and 1000 (200A)	250 and 1000 (200A)	250 and 1000 (2000A and 3000FC) (2500 N/A)	250 and 1000 (2000A and 3000FC) (2500 N/A)	—
Inrush current kA peak	20	20	20	20	—
	20 and 20 (2000A)	20 and 20 (2000A)	20 and 20 (2000A and 3000FC) (2500 N/A)	20 and 20 (2000A and 3000FC) (2500 N/A)	—
Inrush frequency kHz	4.4	4.4	4.4	4.4	—
	5 and 5 (2000A)	5 and 5 (2000A)	5 and 5 (2000A and 3000FC) (2500 N/A)	5 and 5 (2000A and 3000FC) (2500 N/A)	—
Mechanical endurance (no-load operations) [7]	15,000	15,000	15,000	15,000	15,000

3

IEC Standards

IEC Standards ① — VCP-W Vacuum Circuit Breaker Types Rated on Symmetrical Current Rating Basis

Identification	Rated Values							
		Insulation Level						
Circuit Breaker Type	Voltage kV rms	Power Frequency kV rms Peak	Impulse Withstand kV Peak	Normal Current Amperes	Short-Circuit Breaking Current and 3-Second Short-Time Current kA rms	Short-Circuit Making Current kV Peak	Cable Charging Breaking Current Amperes	Weight Lbs (kg)
36 VCP-WND25	3.6	10	40	630	25	65	10	350 (159)
	3.6	10	40	1250	25	65	10	350 (159)
36 VCP-WND32	3.6	10	40	630	31.5	82	10	350 (159)
	3.6	10	40	1250	31.5	82	10	350 (159)
72 VCP-WND25	7.2	20	60	630	25	65	10	350 (159)
	7.2	20	60	1250	25	65	10	350 (159)
72 VCP-WND32	7.2	20	60	630	31.5	82	10	350 (159)
	7.2	20	60	1250	31.5	82	10	350 (159)
36 VCP-W25	3.6	10	40	630	25	65	10	414 (188)
	3.6	10	40	1250	25	65	10	430 (195)
	3.6	10	40	2000	25	65	10	496 (225)
36 VCP-W32	3.6	10	40	1250	31.5	82	10	414 (188)
	3.6	10	40	2000	31.5	82	10	496 (225)
36 VCP-W40	3.6	10	40	1250	40	104	10	496 (225)
	3.6	10	40	2000	40	104	10	550 (250)
72 VCP-W25	7.2	20	60	630	25	65	10	414 (188)
	7.2	20	60	1250	25	65	10	414 (188)
	7.2	20	60	2000	25	65	10	496 (225)
72 VCP-W32	7.2	20	60	1250	31.5	82	10	414 (188)
	7.2	20	60	2000	31.5	82	10	430 (195)
72 VCP-W40	7.2	20	60	1250	40	104	10	430 (195)
	7.2	20	60	2000	40	104	10	496 (225)
120 VCP-W25	12.0	28	75	630	25	65	25	430 (195)
	12.0	28	75	1250	25	65	25	496 (225)
	12.0	28	75	2000	25	65	25	496 (225)
120 VCP-W32	12.0	28	75	1250	31.5	82	25	430 (195)
	12.0	28	75	2000	31.5	82	25	496 (225)
120 VCP-W40	12.0	28	75	1250	40	104	25	496 (225)
	12.0	28	75	2000	40	104	25	550 (250)
175 VCP-W25	17.5	38	95	630	25	65	—	430 (195)
	17.5	38	95	1250	25	65	—	496 (225)
	17.5	38	95	2000	25	65	—	496 (225)
175 VCP-W32	17.5	38	95	1250	31.5	82	—	430 (195)
	17.5	38	95	2000	31.5	82	—	496 (225)
175 VCP-W40	17.5	38	95	1250	40	104	—	496 (225)
	17.5	38	95	2000	40	104	—	550 (250)
175 VCP-W50	17.5	38	95	1250	50	130	—	1013 (460)
	17.5	38	95	2000	50	130	—	1079 (490)
	17.5	38	95	3150	50	130	—	1156 (525)

Note

① IEC Standards 60056 and 60694 apply.

ANSI Standard Ratings—VCP-T and VCP-TR Vacuum Circuit Breakers (to ANSI C37.04 and C37.09)

Identification	Rated Values						
		Insulation Level					
Circuit Breaker Type	Voltage Class	Power Frequency	Impulse Withstand	Continuous Current	Short-Circuit ③ Breaking Current	Short-Circuit Making Current	Mechanical Endurance C–O
	kV rms	kV rms	kV Peak	Amperes	kA rms	kA Peak	Operations
50 VCP-T16 and 50 VCP-TR16	4.76	19	60	600	16	42	20,000
	4.76	19	60	800	16	42	20,000
	4.76	19	60	1200	16	42	10,000
	4.76	19	60	1600 ②	16	42	10,000
50 VCP-T20 and 50 VCP-TR20	4.6	19	60	600	16	52	10,000
	4.6	19	60	800	16	52	10,000
	4.6	19	60	1200	16	52	10,000
	4.6	19	60	1600 ②	16	52	10,000
50 VCP-T25 and 50 VCP-TR25	4.76	19	60	600	25	65	10,000
	4.76	19	60	800	25	65	10,000
	4.76	19	60	1200	25	65	10,000
	4.76	19	60	1600 ②	25	65	10,000
75 VCP-T16 and 75 VCP-TR16	8.25	20	60 ①	600	16	42	20,000
	8.25	20	60 ①	800	16	42	20,000
	8.25	20	60 ①	1200	16	42	10,000
	8.25	20	60 ①	1600 ②	16	42	10,000
75 VCP-T20 and 75 VCP-TR20	8.25	20	60 ①	600	20	52	10,000
	8.25	20	60 ①	800	20	52	10,000
	8.25	20	60 ①	1200	20	52	10,000
	8.25	20	60 ①	1600 ②	20	52	10,000
75 VCP-T25 and 75 VCP-TR25	8.25	20	60 ①	600	25	65	10,000
	8.25	20	60 ①	800	25	65	10,000
	8.25	20	60 ①	1200	25	65	10,000
	8.25	20	60 ①	1600 ②	25	65	10,000
150 VCP-T16 and 150 VCP-TR16	15	36	95	600	16	42	10,000
	15	36	95	800	16	42	10,000
	15	36	95	1200	16	42	10,000
	15	36	95	1600 ②	16	42	10,000
150 VCP-T20 and 150 VCP-TR20	15	36	95	600	20	52	10,000
	15	36	95	800	20	52	10,000
	15	36	95	1200	20	52	10,000
	15	36	95	1600 ②	20	52	10,000
150 VCP-T25 and 150 VCP-TR25	15	36	95	600	25	65	10,000
	15	36	95	800	25	65	10,000
	15	36	95	1200	25	65	10,000
	15	36	95	1600 ②	25	65	10,000

Notes

① Use 15 kV breaker and cassette when 95 kV impulse withstand required.

② 1600A VCP-T breaker available.

③ Also 2 second short-time current rating.

ANSI Standard Ratings—VCP-TL/VCP-TRL Vacuum Circuit Breakers (to ANSI C37.04 and C37.09)

Identification	Rated Values							
		Insulation Level						
Circuit Breaker Type ①	Rated Maximum Voltage kV rms	Power Frequency kV rms	Impulse Withstand kV Peak	Continuous Current Amperes	Short-Circuit Breaking Current ② kA rms	Short-Circuit Making Current kA Peak	Mechanical Endurance ③ C–O Operations	Approx. Weight Fix/Drawout Lbs
50 VCP-TL16 and 50 VCP-TRL16	4.76	19	60	600	16	42	100,000	153/232
				1200	16	42	100,000	155/234
				1600 ④	16	42	100,000	157/NA
50 VCP-TL20 and 50 VCP-TRL20	4.76	19	60	600	20	52	100,000	159/237
				1200	20	52	100,000	161/239
				1600 ④	20	52	100,000	163/NA
50 VCP-TL25 and 50 VCP-TRL25	4.76	19	60	600	25	65	100,000	166/243
				1200	25	65	100,000	168/245
				1600 ④	25	65	100,000	170/NA
75 VCP-TL16 and 75 VCP-TRL16	8.25	20	75 ⑤	600	16	42	100,000	155/232
				1200	16	42	100,000	157/234
				1600 ④	16	42	100,000	159/NA
75 VCP-TL20 and 75 VCP-TRL20	8.25	20	75 ⑤	600	20	52	100,000	161/239
				1200	20	52	100,000	161/241
				1600 ④	20	52	100,000	163/NA
75 VCP-TL25 and 75 VCP-TRL25	8.25	20	75 ⑤	600	25	65	100,000	166/245
				1200	25	65	100,000	168/247
				1600 ④	25	65	100,000	170/NA
150 VCP-TL16 and 150 VCP-TRL16	15	36	95	600	16	42	100,000	155/234
				1200	16	42	100,000	157/237
				1600 ④	16	42	100,000	159/NA
150 VCP-TL20 and 150 VCP-TRL20	15	36	95	600	20	52	100,000	161/239
				1200	20	52	100,000	163/241
				1600 ④	20	52	100,000	166/NA
150 VCP-TL25 and 150 VCP-TRL25	15	36	95	600	25	65	100,000	168/245
				1200	25	65	100,000	170/247
				1600 ④	25	65	100,000	172/NA

Notes

① Independent shunt trips are available for use with traditional protective relaying schemes.
② Also 2-second short-time current rating.
③ Operating mechanism up to 100,000 operations, vacuum interrupter 30,000.
④ 1600A available as fixed VCP-TRL/VCP-TRLC circuit breaker only.
⑤ Use 15 kV breaker and cassette when impulse withstand >75 kV is required.

IEC Standard Ratings—T-VAC and T-VACR Vacuum Circuit Breakers (to IEC 62271-100)

Identification	Rated Values						
		Insulation Level					
Circuit Breaker Type	Voltage Class	Power Frequency Withstand Voltage	Lightning Impulse (U_w) Withstand Voltage	Normal Current (I_n)	Short-Circuit ③ Breaking Current	Short-Circuit Making Current	Mechanical Endurance C–O
	kV rms	kV rms	kV Peak	Amperes	kA rms	kA Peak	Operations
72 T-VAC16 and 72 T-VACR16	7.2	20	60	630	16	40	20,000
	7.2	20	60	800	16	40	20,000
	7.2	20	60	1250	16	40	10,000
	7.2	20	60	1600 ②	16	40	10,000
72 T-VAC20 and 72 T-VACR20	7.2	20	60	630	20	50	10,000
	7.2	20	60	800	20	50	10,000
	7.2	20	60	1250	20	50	10,000
	7.2	20	60	1600 ②	20	50	10,000
72 T-VAC25 and 72 T-VACR25	7.2	20	60	630	25	63	10,000
	7.2	20	60	800	25	63	10,000
	7.2	20	60	1250	25	63	10,000
	7.2	20	60	1600 ②	25	63	10,000
120 T-VAC16 and 120 T-VACR16	12	28	75 ①	630	16	40	20,000
	12	28	75 ①	800	16	40	20,000
	12	28	75 ①	1250	16	40	10,000
	12	28	75 ①	1600 ②	16	40	10,000
120 T-VAC20 and 120 T-VACR20	12	28	75 ①	630	20	50	10,000
	12	28	75 ①	800	20	50	10,000
	12	28	75 ①	1250	20	50	10,000
	12	28	75 ①	1600 ②	20	50	10,000
120 T-VAC25 and 120 T-VAC25	12	28	75 ①	630	25	63	10,000
	12	28	75 ①	800	25	63	10,000
	12	28	75 ①	1250	25	63	10,000
	12	28	75 ①	1600 ②	25	63	10,000
175 T-VAC16 and 175 T-VACR16	17.5	38	95	630	16	40	10,000
	17.5	38	95	800	16	40	10,000
	17.5	38	95	1250	16	40	10,000
	17.5	38	95	1600 ②	16	40	10,000
175 T-VAC20 and 175 T-VACR20	17.5	38	95	630	20	50	10,000
	17.5	38	95	800	20	50	10,000
	17.5	38	95	1250	20	50	10,000
	17.5	38	95	1600 ②	20	50	10,000
175 T-VAC25 and 175 T-VACR25	17.5	38	95	630	25	63	10,000
	17.5	38	95	800	25	63	10,000
	17.5	38	95	1250	25	63	10,000
	17.5	38	95	1600 ②	25	63	10,000

Notes

① Use 17.5 kV breaker and cassette when 95 kV impulse withstand required.

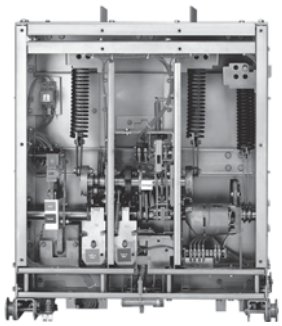
② 1600A T-VAC breaker available.

③ Also 3-second short-time current rating.

Dimensions

Approximate Dimensions in Inches (mm)

Type VCP-W Circuit Breaker Shown from Rear

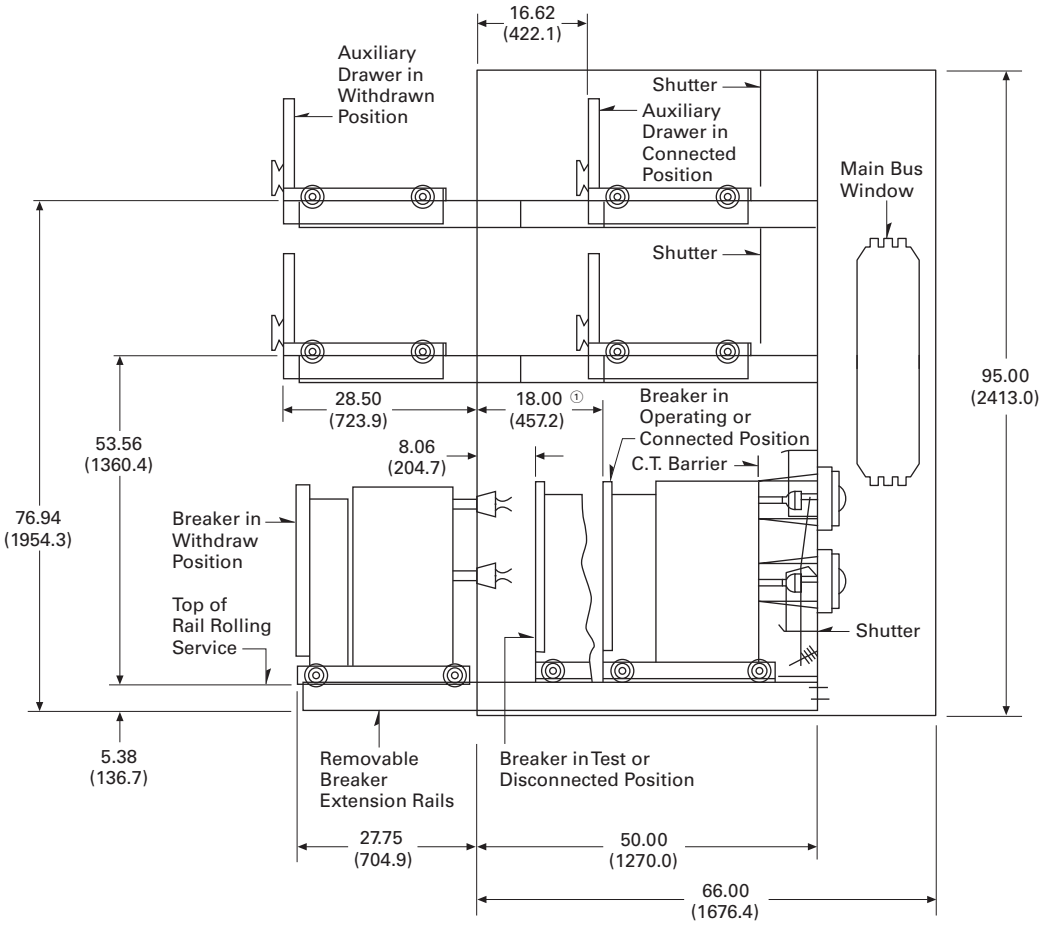


Type VCP-W Circuit Breaker with Deadfront Panel Removed

Mini Module

5/15 kV VCPW-ND and VCP-W Power Modules

Power Module, 5/15 kV VCPW-ND 26.00 (660.4) Wide, VCP-W 36.00 (914.4) Wide



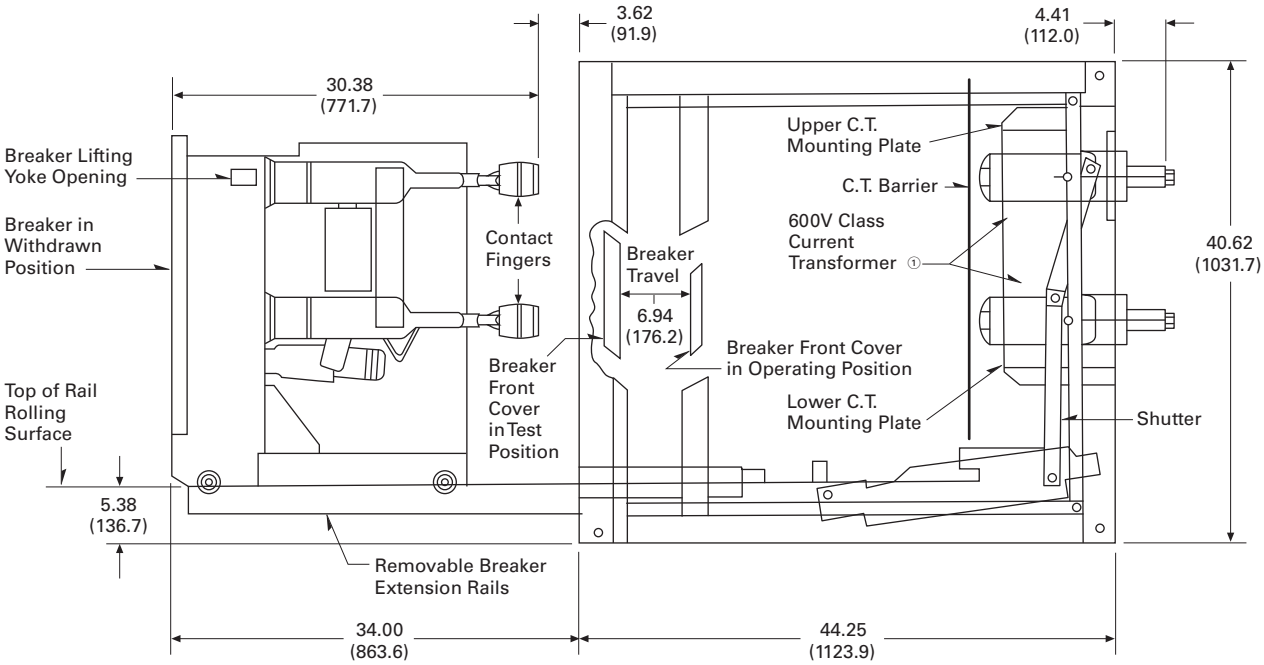
Note

① VCPW-ND dimensions of breaker travel 15.00 (381.0).

Approximate Dimensions in Inches (mm)

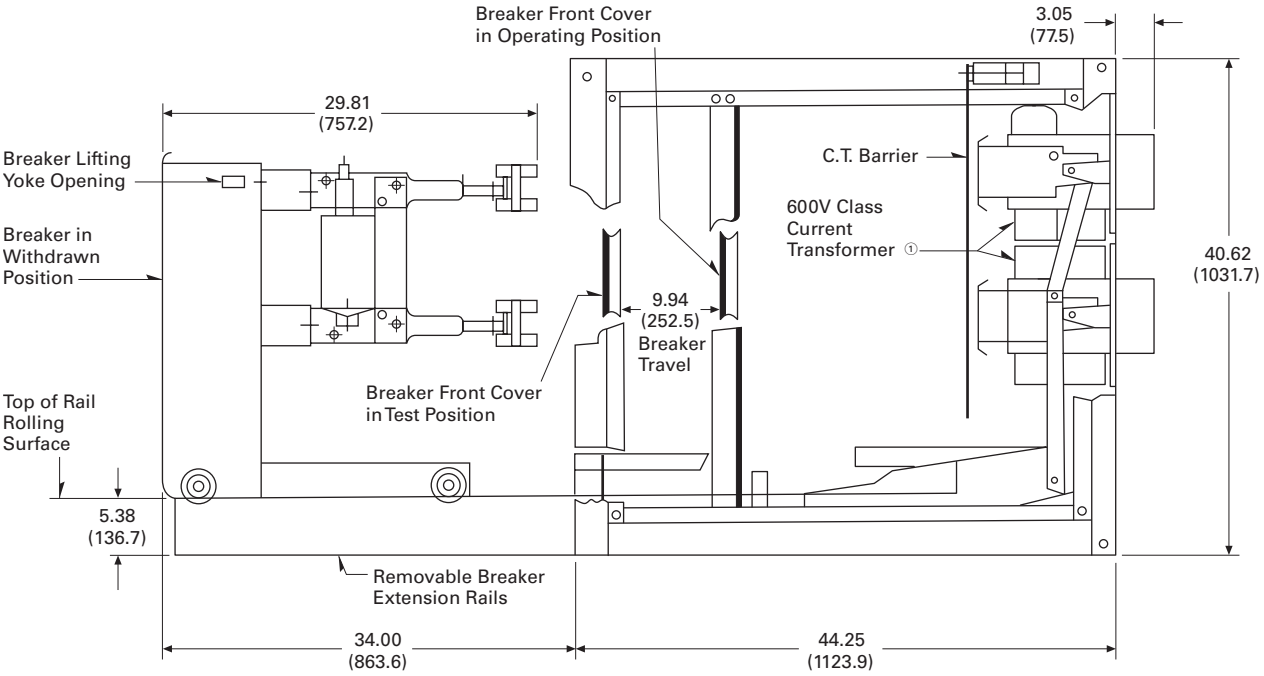
5/15 kV VCPW-ND and VCP-W Mini Modules

5 kV VCPW-ND Mini Module 25.88 (657.4) Wide



5/15 kV VCP-W Mini Module

5/15 kV VCP-W Mini-Module 35.88 (911.4) Wide



Note

① Current transformers not supplied.

Contents

Description	*Page*
Catalog Number Selection	**V4-T3-57**
SL MV Power Contactor 7.2 kV/160–400A	**V4-T3-58**
SL MV Power Contactor 7.2 kV/800A	**V4-T3-67**
SL MV Power Contactor 15 kV/300A	**V4-T3-71**

Product Overview

Voltage Class

Eaton SL Medium Voltage Vacuum Contactors are designed to operate at voltages from 2200V to 15,000V, depending on contactor type. Typical system voltages are 2400V, 3300V, 4160V and 6600V for 7.2 kV contactors and 10,000V, 11,000V, 13,200V and 13,800V for 15 kV contactors.

Altitude

7.2 kV/160–400A SL Contactors are capable of operating in virtually any altitude range. Three versions are offered in Standard, High and Low altitude configurations. No de-rating is necessary for proper operation. Altitude designations are listed in the table below.

Altitude

Altitude	Low	Standard	High
7.2 kV/160–400A			
Feet	–11,500 to –3300	–3300 to +6600	+6600 to +13,100
Meters	–3500 to –1000	–1000 to +2000	+2000 to +4000
7.2 kV/800A and 15 kV/300A			
Feet	N/A	–3300 to +11,800	+11,800 to +16,000
Meters	N/A	–1000 to +3600	+3600 to +4900

Control Voltage and Dropout Time

Control coil voltage and dropout time for all SL contactors are field selectable. Standard voltages available are 120/60V, 110/50V, 240/60V, 220/50V and 125 Vdc. Coil will pick up at 80% of rated coil voltage and dropout not sooner than 60% of rated coil voltage. Opening time is field selectable within the range of 30–330 ms for all 7.2 kV 160–400A contactors. Opening time is field selectable within the range of 50–330 ms for all 7.2 kV 800A and 15 kV 300A contactors.

Catalog Number Selection

Power Contactors

SL N 01 2 S 5 A - 22 0

SL Contactor Series

Design
N = NEMA
C = IEC

Type
01 = 7.2 kV (160–400A) Contactor
03 = 15 kV (300A) Contactor
04 = 7.2 kV (800A) Contactor

Ampere Rating
1 = 160A
2 = 7.2 kV/200A
3 = 7.2 kV/360A, 15 kV/300A
4 = 400A
8 = 800A

Altitude

7.2 kV/160–400A	7.2 kV/800A 15 kV/300A
S = Standard –3281 to +6562 ft (–1000 to +2000m) **L** = Low –11,483 to –3281 ft (–3500 to –1000m) **H** = High +6562 to +13,123 ft (+2000 to +4000m)	**S** = Standard –3281 to +11,811 ft (–1000 to +3600m) **H** = High +11,811 to +16,076 ft (+3600 to +4900m)

Coil Voltage
A = 120/60
B = 240/60
S = 125 Vdc
U = 110/50
W = 220/50

Coil Dropout Time
5 = 30 ms 7.2 kV (160–400A)
6 = 50 ms
7 = 130 ms
8 = 250 ms
9 = 330 ms

Auxiliary Contacts

7.2 kV/160–400A	7.2 kV/800A 15 kV/300A
22 = 2NO, 2NC **28** = 2NO, 8NC **37** = 3NO, 7NC **46** = 4NO, 6NC **55** = 5NO, 5NC **64** = 6NO, 4NC **73** = 7NO, 3NC **82** = 8NO, 2NC	**22** = 2NO, 2NC

Mechanical Latch

7.2 kV/160–400A (Coil Voltage)	7.2 kV/800A 15 kV/300A (Coil Voltage)
0 = None **1** = 24 Vdc **2** = 32 Vdc **3** = 48 Vdc **4** = 110/50,120/60 or 125 Vdc **5** = 220/50, 240/60	**0** = None **1** = 24 Vdc **3** = 48 Vdc **4** = 110 (50/60) **5** = 220 (50/60) **6** = 96–125 Vdc

SL 7.2 kV/160–400A Medium Voltage Contactor

Contents

Description	*Page*
Product Overview	**V4-T3-56**
SL MV Power Contactor 7.2 kV/160–400A	
Standards and Certifications	**V4-T3-60**
Product Selection	**V4-T3-60**
Options and Accessories	**V4-T3-60**
Technical Data and Specifications	**V4-T3-61**
Wiring Diagrams	**V4-T3-64**
Dimensions	**V4-T3-65**
SL MV Power Contactor 7.2 kV/800A	**V4-T3-67**
SL MV Power Contactor 15 kV/300A	**V4-T3-71**

SL MV Power Contactor 7.2 kV/160–400A

Product Description

- A single family of contactors for any medium voltage control application. Voltage range of 2200–7200V
- Ampere ratings from 160 to 400A with induction motor horsepower ranges from 600 to 5500 hp
- Three different altitude versions
- Leading-edge vacuum technology
- Fully complies with global standards

Application Description

Eaton's SL Medium Voltage Contactor starting applications:

- Squirrel-cage induction motors
- Synchronous motors
- Wound-rotor

Fully applicable to:

- Full voltage starting
- Reduced voltage starting

The perfect choice for harsh duty applications:

- Mining
- Pulp and paper
- HVAC
- Petrochemical
- Automotive
- Many others

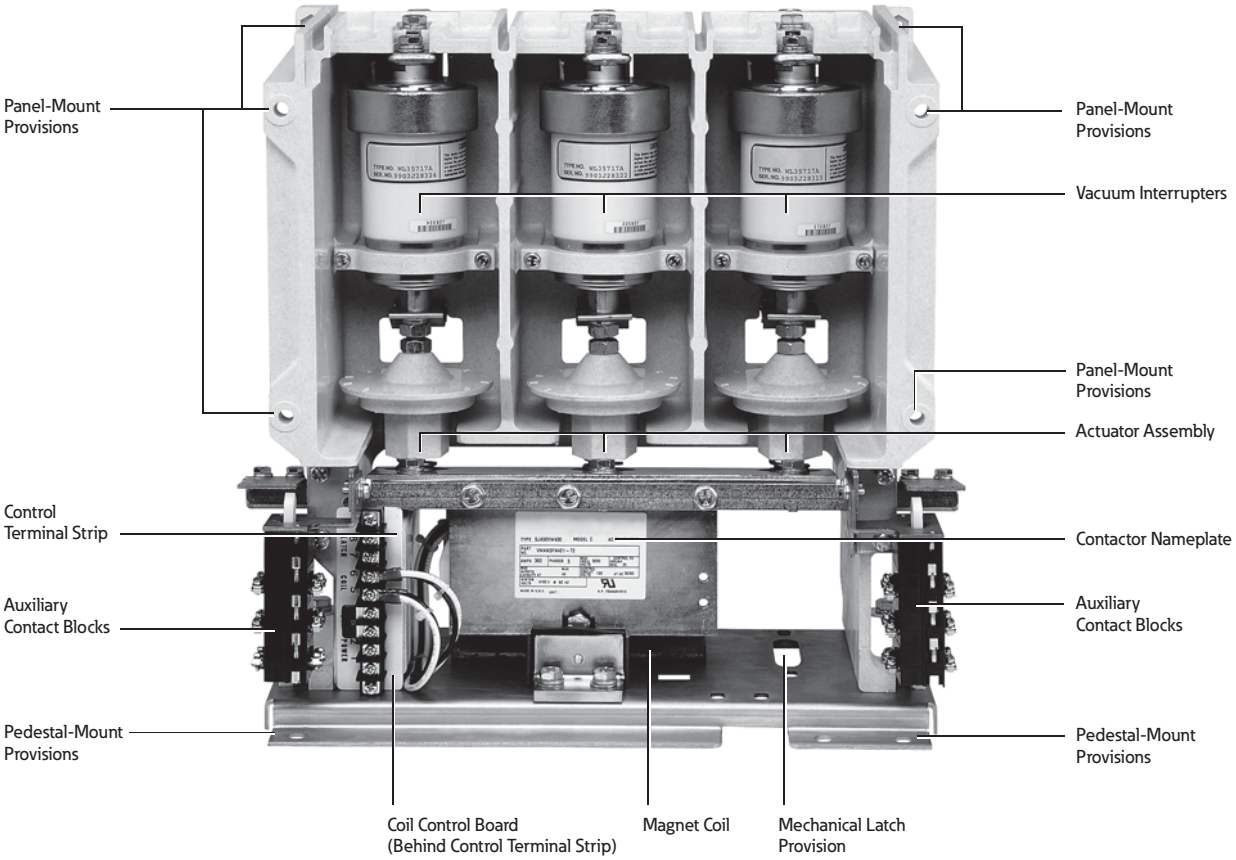
Features, Benefits and Functions

- Long life—300,000 electrical and over 2 million mechanical
- Mounting flexibility—panel or pedestal mounting provisions are standard. Unit can be mounted in horizontal or vertical position
- Field-selectable settings for coil voltage, AC/DC, and coil dropout time
- Field kits available for auxiliary contacts and mechanical latch. Accessories are common for all sizes
- Special ordering allows unit to be factory pre-set to customer specification, including field kit installation
- Highest quality available—all contactors manufactured within state-of-the-art "ISO-Certified" facilities. 100% made in America

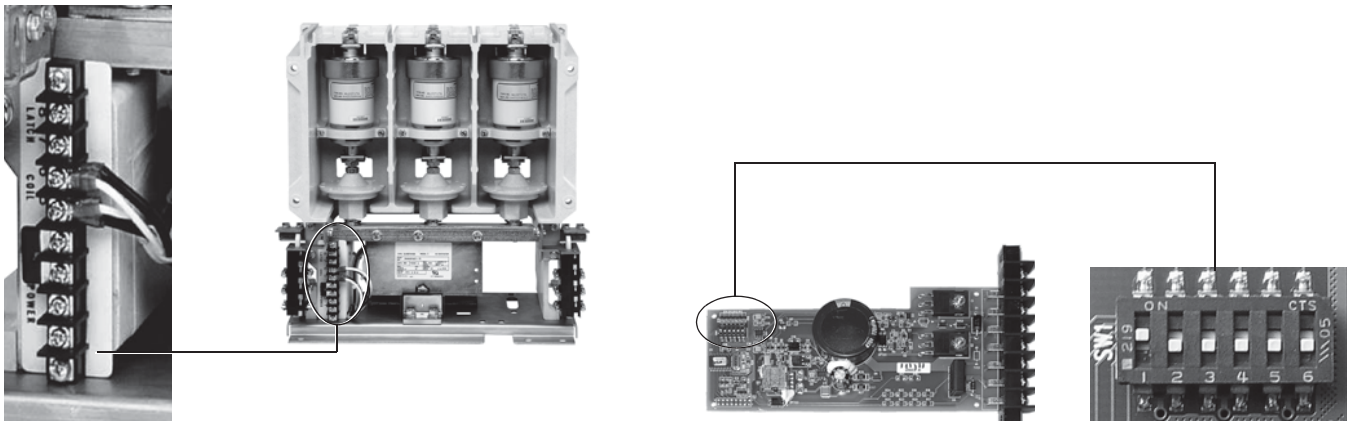
Easy-to-Install Option Kits (Field Addition)

- Up to six extra auxiliary contacts
- Mechanical latch—many coil voltages

SL Series Features (7.2 kV/160–400A)



Control Settings



Control Terminal Strip *Coil Control Board* *DIP Switches*

Standards and Certifications

Global Acceptability

- NEMA
- ANSI
- IEC

Third-Party Verification

- UL
- CSA
- KEMA
- Third-party qualified by UL, CSA, KEMA

Design and Test Standards

- UL 347, File No. E63257
- CSA File No. LR28548
- IEC No. 60470
- ANSI/NEMA ICS 3

Product Selection

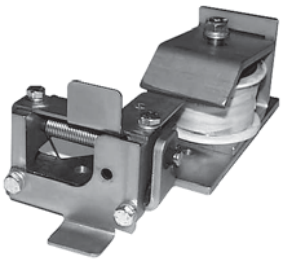
Contact Eaton for pricing.

Options and Accessories

SL Vacuum Contactor Series—Sizes 7.2 kV/160–400A Accessory Kits

Mechanical Latch Kit

Field Mount to 7.2 kV/160–400A SL Vacuum Contactor. Coil voltages available in a wide range of AC and DC selections. Easy to install on new and existing units.



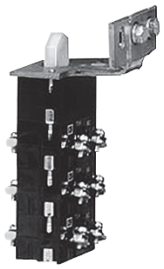
Mechanical Latch Kit

Ordering Information—Mechanical Latch Kit

Coil Voltage	Catalog Number
24 Vdc	**SLA-ML24**
32 Vdc	**SLA-ML32**
48 Vdc	**SLA-ML48**
110/50, 120/60, 125 Vdc selectable	**SLA-ML120**
220/50, 240/60 selectable	**SLA-ML240**

Auxiliary Contact Kit

Field Mount auxiliary contact kits for 7.2 kV/160–400A SL Vacuum Contactor. Contact kits are available in many configurations of NO-NC.



Auxiliary Contact Kit

Ordering Information—Auxiliary Contact Kit

Description	Catalog Number
3NO–3NC additional	**SLA-AS33**
6NO additional	**SLA-AS60**
6NC additional	**SLA-AS06**
5NO–1NC additional	**SLA-AS51**
4NO–2NC additional	**SLA-AS42**
2NO–4NC additional	**SLA-AS24**
1NO–5NC additional	**SLA-AS15**

Mechanical Interlock Kit

Field Mount mechanical interlock kits for 7.2 kV/160–400A SL Vacuum Contactor.

Mechanical Interlock Kit

Ordering Information—Mechanical Interlock Kit

Description	Catalog Number
Vertical or horizontal arrangement	**SLA-MI**

Technical Data and Specifications

The SL 400 Contactor Ratings

- Voltages of 2200–7200V
- Amperages from 160 to 400A
- Interrupting ratings as high as 8500A

Control Voltages (Field Adjustable)

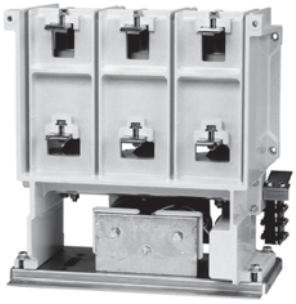
- 110, 220 Vac, 50 Hz
- 120, 240 Vac, 60 Hz
- 125 Vdc

Dropout Time (Field Adjustable)

- 30 ms
- 50 ms
- 130 ms
- 250 ms
- 330 ms

Front and Rear View (7.2 kV/160–400A)

Front View



Rear View

Control Voltage Settings (7.2 kV/160–400A)

Setting	SW1	SW2	SW3
110 Vac, 50 Hz	Off	Off	Off
120 Vac, 60 Hz	On	Off	Off
220 Vac, 50 Hz	Off	On	Off
240 Vac, 60 Hz	On	On	Off
125 Vdc	Off	Off	On

Dropout Time Settings (7.2 kV/160–400A)

Delay Setting	SW4	SW5	SW6
30 ms	Off	Off	Off
50 ms	On	Off	Off
130 ms	Off	On	Off
250 ms	On	On	Off
330 ms	Off	Off	On

Altitude Designations (7.2 kV/160–400A)

Altitude	Low	Standard	High
Feet	–11,483 to –3281	–3281 to +6562	+6562 to +13,123
Meters	–3500 to –1000	–1000 to +2000	+2000 to +4000

Note

Stock units pre-set to 120/60 Vac.

SL Series Fuses

Fuse Application Table for SL Contactors—7.2 kV/160A

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
11–18	2400–4800	5BCLS-30	30–1R	30
18–31	2400–4800	5BCLS-2R	70–2R	30
31–46	2400–4800	5BCLS-3R	100–3R	30
46–62	2400–4800	5BCLS-4R	130–4R	30
62–74	2400–4800	5BCLS-5R	150–5R	30
74–93	2400–4800	5BCLS-6R	170–6R	30
93–137	2400–4800	5BCLS-9R	200–9R	130
137–160	2400–4800	5BCLS-12R	230–12R	130
11–34	5500–6600	7BCLS-2R	70–2R	30
34–46	5500–6600	7BCLS-3R	100–3R	30
46–56	5500–6600	7BCLS-4R	130–4R	30
56–68	5500–6600	7BCLS-5R	150–5R	30
68–85	5500–6600	7BCLS-6R	170–6R	30
85–137	5500–6600	7BCLS-9R	200–9R	50
137–160	5500–6600	7BCLS-12R	230–12R	250

Fuse Application Table for SL Contactors—7.2 kV/200A

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
11–18	2400–4800	5BCLS-30	30–1R	30
18–31	2400–4800	5BCLS-2R	70–2R	30
31–46	2400–4800	5BCLS-3R	100–3R	30
46–62	2400–4800	5BCLS-4R	130–4R	30
62–74	2400–4800	5BCLS-5R	150–5R	30
74–93	2400–4800	5BCLS-6R	170–6R	30
93–137	2400–4800	5BCLS-9R	200–9R	130
137–200 ①	2400–4800	5BCLS-12R	230–12R	130
11–34	5500–6600	7BCLS-2R	70–2R	30
34–46	5500–6600	7BCLS-3R	100–3R	30
46–56	5500–6600	7BCLS-4R	130–4R	30
56–68	5500–6600	7BCLS-5R	150–5R	30
68–85	5500–6600	7BCLS-6R	170–6R	30
85–137	5500–6600	7BCLS-9R	200–9R	50
137–200 ①	5500–6600	7BCLS-12R	230–12R	250

Fuse Application Table for SL Contactors—7.2 kV/360A

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
11–18	2400–4800	5BCLS-30	30–1R	30
18–31	2400–4800	5BCLS-2R	70–2R	30
31–46	2400–4800	5BCLS-3R	100–3R	30
46–62	2400–4800	5BCLS-4R	130–4R	30
62–74	2400–4800	5BCLS-5R	150–5R	30
74–93	2400–4800	5BCLS-6R	170–6R	30
93–137	2400–4800	5BCLS-9R	200–9R	130
137–187	2400–4800	5BCLS-12R	230–12R	130
187–200	2400–4800	5BCLS-12R	230–12R	130
200–360	2400–4800	N/A	—	—
11–34	5500–6600	7BCLS-2R	70–2R	30
34–46	5500–6600	7BCLS-3R	100–3R	30
46–56	5500–6600	7BCLS-4R	130–4R	30
56–68	5500–6600	7BCLS-5R	150–5R	30
68–85	5500–6600	7BCLS-6R	170–6R	30
85–137	5500–6600	7BCLS-9R	200–9R	50
137–200 ①	5500–6600	7BCLS-12R	230–12R	250
200–360	5500–6600	N/A	—	—

Fuse Application Table for SL Contactors—7.2 kV/400A

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
11–18	2400–4800	5BCLS-30	30–1R	30
18–31	2400–4800	5BCLS-2R	70–2R	30
31–46	2400–4800	5BCLS-3R	100–3R	30
46–62	2400–4800	5BCLS-4R	130–4R	30
62–74	2400–4800	5BCLS-5R	150–5R	30
74–93	2400–4800	5BCLS-6R	170–6R	30
93–137	2400–4800	5BCLS-9R	200–9R	30
137–187	2400–4800	5BCLS-12R	230–12R	30
187–273	2400–4800	5BCLS-18R	390–18R	50
273–400 ②	2400–4800	5BCLS-24R	450–24R	130
11–34	5500–6600	7BCLS-2R	70–2R	30
34–46	5500–6600	7BCLS-3R	100–3R	30
46–56	5500–6600	7BCLS-4R	130–4R	30
56–68	5500–6600	7BCLS-5R	150–5R	30
68–85	5500–6600	7BCLS-6R	170–6R	30
85–137	5500–6600	7BCLS-9R	200–9R	30
137–187 ①	5500–6600	7BCLS-12R	230–12R	30
273–400 ②	5500–6600	7BCLS-24R	450–24R	250

Notes

① For FLA >180, maximum acceleration time = 4.5 seconds.

② For FLA >360, maximum acceleration time = 6 seconds.

Fuse selections based on LRC = FLA x 6 with acceleration time of 10 seconds except where otherwise noted.

SL Series Ratings

Type SL Vacuum Contactor Ratings (7.2 kV/160–400A)

	Interrupting Rating		Application Table					
				Synchronous Motor Horsepower				
Rated Utilization Voltage	NEMA Unfused (E1) kA	NEMA Fused (E2) kA	Induction Motor Horsepower	(0.8 PF)	(1.0 PF)	Transformer kVA	Capacitor kVAR	Maximum Insulation Voltage
7.2 kV/160A Frame								
2200–2500	4.5	50	600	600	800	600	480	7200
3000–3600	4.5	50	900	900	1000	800	640	7200
3800–4800	4.5	50	1200	1200	1400	1000	960	7200
6000–6900	4.5	50	1800	1800	2200	1600	1320	7200
7.2 kV/200A Frame								
2200–2500	4.5	50	800	800	1000	750	600	7200
3000–3600	4.5	50	1100	1100	1250	1000	800	7200
3800–4800	4.5	50	1500	1500	1750	1250	1200	7200
6000–6900	4.5	50	2250	2250	2750	2000	1650	7200
7.2 kV/360A Frame								
2200–2500	4.5	50	1500	1500	1750	1200	1000	7200
3000–3600	4.5	50	2000	2000	2500	1600	1475	7200
3800–4800	4.5	50	2500	2500	3000	2000	2150	7200
6000–6900	4.5	50	4000	4000	5000	3200	2950	7200
7.2 kV/400A Frame								
2200–2500	8.5	50	1750	1750	2000	1500	1200	7200
3000–3600	8.5	50	2250	2250	2500	2000	1650	7200
3800–4800	8.5	50	3000	3000	3500	2500	2400	7200
6000–6900	8.5	50	4500	4500	5500	4000	3300	7200

Rating Specifications (7.2 kV/160–400A)

Ampere Rating	7.2 kV/160A	7.2 kV/200A	7.2 kV/60A	7.2 kV/400A
Maximum Interrupting Current (Three operations—amperes)	4500	4500	4500	8500
Rated Current	160	200	360	400
IEC Make-Break Capability—AC4 (Amperes) Make	1600	2000	3600	4000
Break	1280	1600	2880	3200

Product Specifications

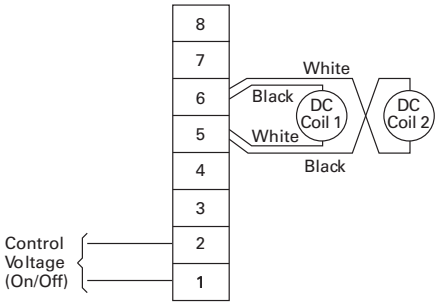
7.2 kV/160–400A

- Short-time current:
  - 30 seconds: 2400A
  - 1 second: 6000A
  - 8.7 ms: 63 kA peak (0.5 cycle)
- Normal service altitude: –3281 to +6562 ft (–1000 to +2000m)
- Mechanical life: 2.5 million
- Electrical life:
  - 6 x Rated Make/1x Rated Break: 300,000 operations
  - 6 x Rated Make/6 x Rated Break: 300,000 operations
- BIL (impulse withstand): 60 kV (1.2 x 50 microseconds)
- Dielectric strength: 20 kV rms (1 minute)
- Closing time: 80 ms (energization to contact touch)
- Selectable opening times:
  - 30 ms (2 cycles)
  - 50 ms (3 cycles)
  - 130 ms (8 cycles)
  - 250 ms (15 cycles)
  - 330 ms (20 cycles)
- Arcing time: 12 ms (0.75 cycle) or less
- Pickup voltage: 80% rated coil voltage
- Dropout voltage: 60% rated coil voltage
- Control voltages:
  - AC/Hz: 110/50, 120/60, 220/50, 240/60
  - DC: 125
- Control circuit burden:
  - Closing: (200 ms)
    - 110/120 AC, 125 DC 1 kVA
    - 220/240 AC 1.8 kVA
  - Holding:
    - 110/120 AC, 125 DC 40 VA
    - 220/240 AC 50 VA
- Auxiliary contact rating:
  - 600V (maximum)
  - 10A continuous current
  - Making capacity
    - AC: 7200 VA
    - DC: 125 VA
  - Breaking capacity
    - AC: 720 VA
    - DC: 125 VA
- Latch (when specified)
  - Mechanical life: 250,000 operations
  - Trip voltage
    - DC: 24V
    - DC: 125V
    - AC: 110/120V
  - Minimum trip voltage: 80% rated coil voltage
  - Trip burden
    - 24 Vdc: 400 VA
    - 48 and 125 Vdc: 400 VA
    - 110 and 120 Vac: 400 VA
    - 220 and 240 Vac: 400 VA
  - Trip time (2 cycles): 30 ms
- Weight
  - 150–360A: 47 lbs (21.3 kg)
  - 400A: 49 lbs (22.2 kg)

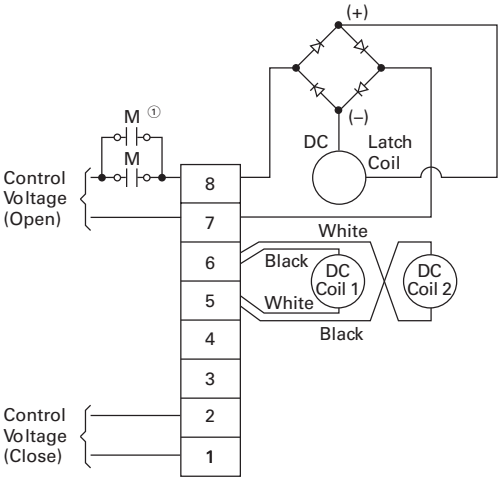
Wiring Diagrams

Electrical Connections Diagrams (7.2 kV/160–400A)

Connection for Magnetically Held Contactor



Connections for Mechanically Latched Contactor



Note

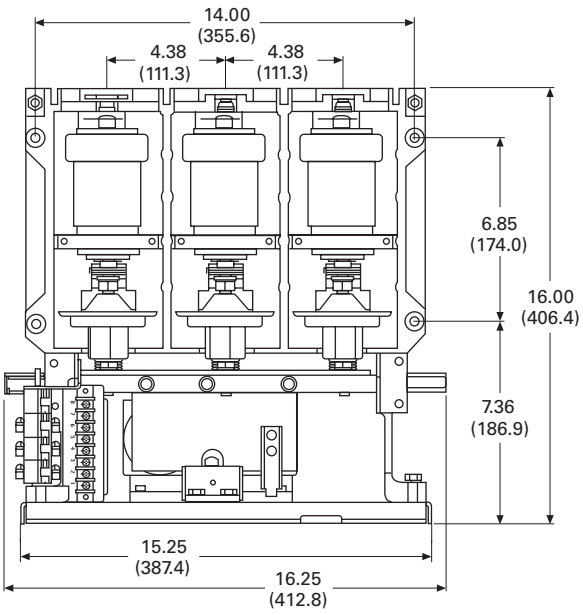
① M contacts are connected in parallel for AC voltages and for ≤48 Vdc.
M contacts are connected in series for >48 Vdc.

Dimensions

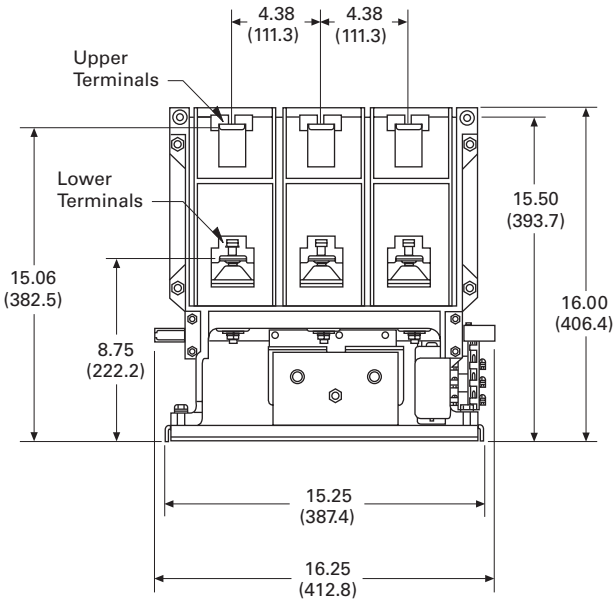
Approximate Dimensions in Inches (mm)

Dimensional Drawings 7.2 kV/160–400A

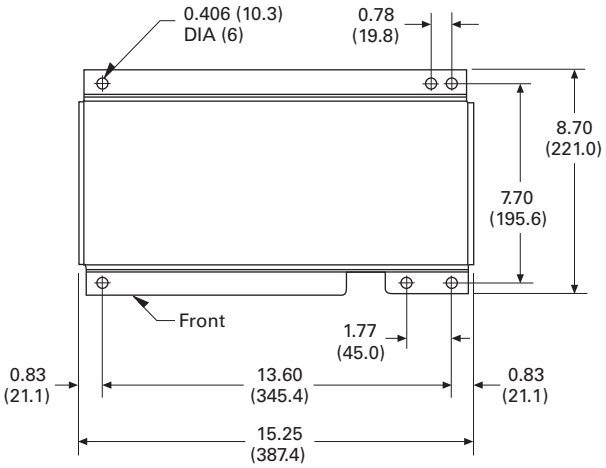
Front



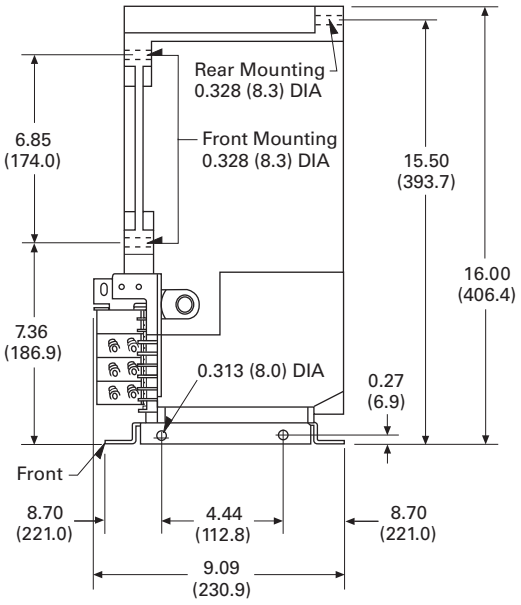
Rear



Base Plate

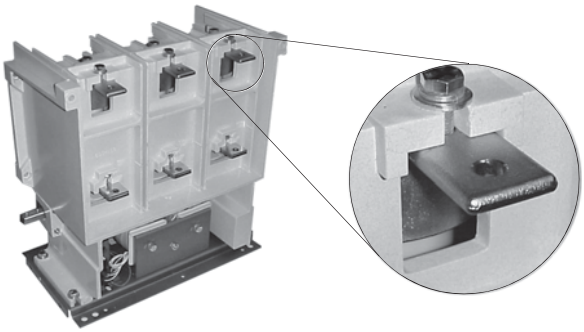


Side

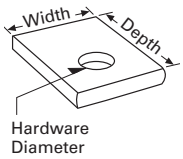


Approximate Dimensions in Inches (mm)

Lug Terminal



Lug Terminal



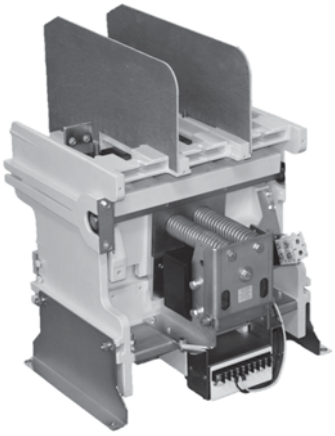
Upper Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
7.2 kV/160	0.75 (19.1)	1.31 (33.3)	10
7.2 kV/200	1.00 (25.4)	1.31 (33.3)	10
7.2 kV/360	1.00 (25.4)	1.31 (33.3)	10
7.2 kV/400	1.00 (25.4)	1.31 (33.3)	10

Lower Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
7.2 kV/160	1.25 (31.8)	1.10 (27.9)	10
7.2 kV/200	1.25 (31.8)	1.10 (27.9)	10
7.2 kV/360	1.25 (31.8)	1.10 (27.9)	10
7.2 kV/400	1.25 (31.8)	1.10 (27.9)	10

SL 7.2 kV/800A Medium Voltage Contactor



Contents

Description	*Page*
Product Overview	**V4-T3-56**
SL MV Power Contactor 7.2 kV/160–400A	**V4-T3-58**
SL MV Power Contactor 7.2 kV/800A	
Options and Accessories	**V4-T3-68**
Technical Data and Specifications	**V4-T3-68**
Dimensions	**V4-T3-70**
SL MV Power Contactor 15 kV/300A	**V4-T3-71**

SL MV Power Contactor 7.2 kV/800A

Product Description

- A single family of contactors for any medium voltage control application. Voltage range of 2200–7200V
- 800A rating with induction motor horsepower ranges from 3000 to 10,000 hp

Application Description

Eaton's SL Medium Voltage Contactors starting applications:

- Squirrel-cage induction motors
- Synchronous motors
- Wound-rotor

Fully applicable to:

- Full voltage starting
- Reduced voltage starting

The perfect choice for harsh duty applications:

- Mining
- Pulp and paper
- HVAC
- Petrochemical
- Automotive
- Many others

Features, Benefits and Functions

- Two different altitude versions
- Leading-edge vacuum technology
- Long life—200,000 electrical and 250,000 mechanical
- Special ordering allows unit to be factory pre-set to customer specification, including field kit installation
- Highest quality available—all contactors manufactured within state-of-the-art "ISO-Certified" facilities. 100% made in America

Factory Installed Option Kit

- Mechanical latch—many coil voltages

Standards and Certifications

Acceptability

- NEMA
- ANSI
- IEC

Third-Party Verification

- UL
- CSA
- KEMA

Design and Test Standards

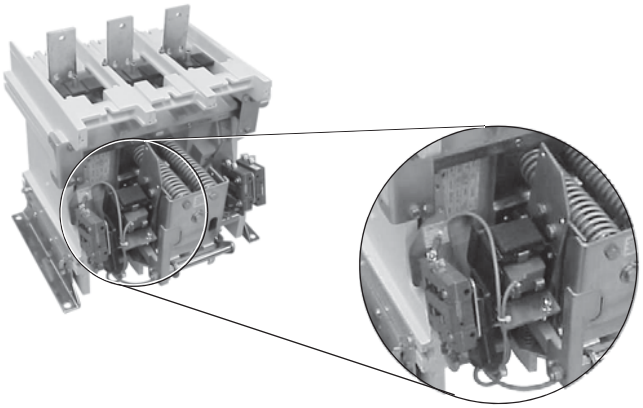
- UL 347, File No. E63257
- CSA
- ANSI/NEMA ICS 3
- IEC 60470

Product Selection

Contact Eaton for pricing.

Options and Accessories

SL Series—Accessory Options 800A



Mechanical Latch Assembly 800A

Mechanical Latch Option—SL Vacuum Contactor Size 800A

Factory installed for 800A SL Vacuum Contactor. Coil voltages available in a wide range of AC and DC selections.

Technical Data and Specifications

The SL Contactor Ratings

- Voltages of 2200–7200V
- 800A (720A enclosed)
- Interrupting rating of 12,500A

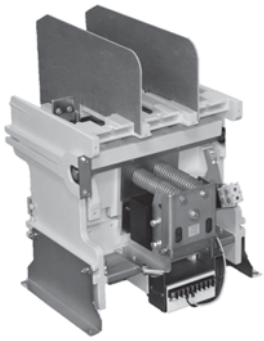
Control Voltages

- 110, 220 Vac, 50 Hz
- 120, 240 Vac, 60 Hz
- 125 Vdc

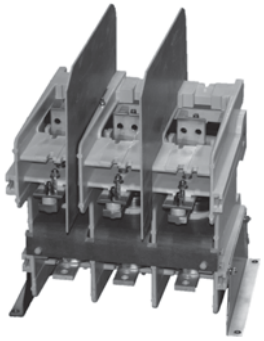
Dropout Time

- 50–330 ms, field selectable

Front and Rear View 7.2 kV/800A



Front View



Rear View

SL Series Fuses

Fuse Application Table for SL Contactors 7.2 kV/SL-800

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
225–360	2400–4800	5BCLS-24R	450–24R	50
360–449	2400–4800	5BCLS-36R	650–36R	130
450–720	2400–4800	5BCLS-44R	800–44R	250
225–400	5500–6600	7BCLS-24R	450–24R	50
400–449	5500–6600	7BCLS-36R	650–36R	130
450–720	5500–6600	7BCLS-44R	800–44R	250

Note

Fuse selections based on LRC = FLA x 6 with acceleration time of 10 seconds.

SL Series Ratings

Type SL Vacuum Contactor Ratings 7.2 kV/SL-800

	Interrupting Rating		Application Table					
				Synchronous Motor Horsepower				
Rated Utilization Voltage	NEMA Unfused (E1) kA	NEMA Fused (E2) kA	Induction Motor Horsepower	(0.8 PF)	(1.0 PF)	Transformer kVA	Capacitor kVAR	Maximum Insulation Voltage
2200–2500	12.5 (50 MVA)	50 (200 MVA at 2300V)	3000	3000	3500	2500	2400	7200
3000–3600	12.5 (50 MVA)	50 (285 MVA at 3300V)	4000	4000	5000	3500	3200	7200
3800–5000	12.5 (75 MVA)	50 (400 MVA at 4600V)	5000	5000	6000	4500	4000	7200
6000–7200	12.5 (100 MVA)	50 (570 MVA at 6600V)	8000	8000	10,000	6000	4800	7200

Rating Specifications 7.2 kV/SL-800

Ampere Rating	7.2 kV/800A
Maximum Interrupting Current (Three operations—amperes)	12,500
Rated Current	800 (720 enclosed)
IEC Make-Break Capability—AC4 (Amperes)	
Make	7650
Break	6120

Product Specifications

7.2 kV/800A

- Short-time current
  - 30 seconds: 4320A
  - 1 second: 10,800A
  - 8.7 ms (0.5 cycle) 86 kA peak
- Normal service altitude: –3281 to +6562 ft (–1000 to +2000m)
- Mechanical life: 250,000
- Electrical life: 200,000 operations
- BIL (impulse withstand): 60 kV (1.2 x 50 microseconds)
- Dielectric strength: 18.2 kV rms (1 minute)
- Closing time (energization to contact touch): 80 ms
- Opening times (de-energization to full open):
  - 50 ms (3 cycles)
  - 130 ms (8 cycles)
  - 200 ms (12 cycles)
  - 330 ms (20 cycles)
- Arcing time: 12 ms (0.75 cycle) or less
- Pickup voltage: 80% rated coil voltage
- Dropout voltage: 60% rated coil voltage
- Control voltages:
  - AC/Hz: 110/50, 120/60 Vac, 220/50, 240/60
  - DC: 125 Vdc
- Control circuit burden:
  - Closing (120/240): 2600 VA
  - Holding (120/240): 50 VA
- Auxiliary contact rating:
  - 600V (maximum)
  - 10A continuous current
  - Making capacity
    - AC: 7200 VA
    - DC: 200 VA
  - Breaking capacity
    - AC: 720 VA
    - DC: 200 VA
- Latch (when specified):
  - Mechanical life: 250,000 operations
  - Trip voltage
    - DC: 24, 48, 96V
    - AC: 110/120, 220/240V 50/60 Hz
  - Minimum trip voltage: 80% rated coil voltage
  - Trip burden
    - 24 Vdc: 1200 VA
    - 48 and 96 Vdc: 400 VA
    - 110 and 220 Vac: 500 VA
  - Trip time (2 cycles): 30 ms
- Weight: 95 lbs (43.1 kg)

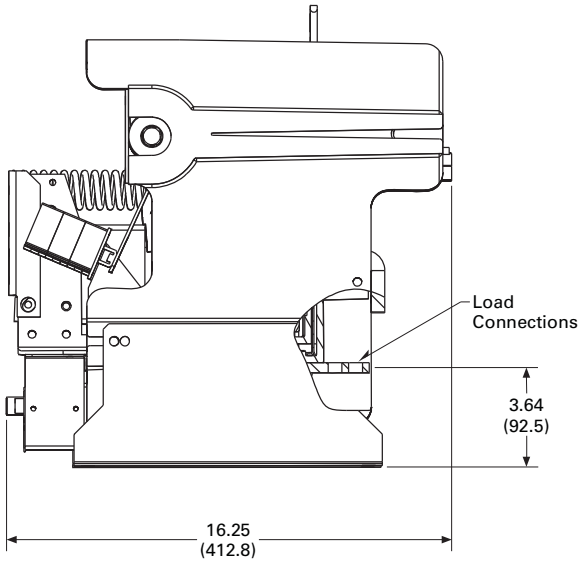
Dimensions

Approximate Dimensions in Inches (mm)

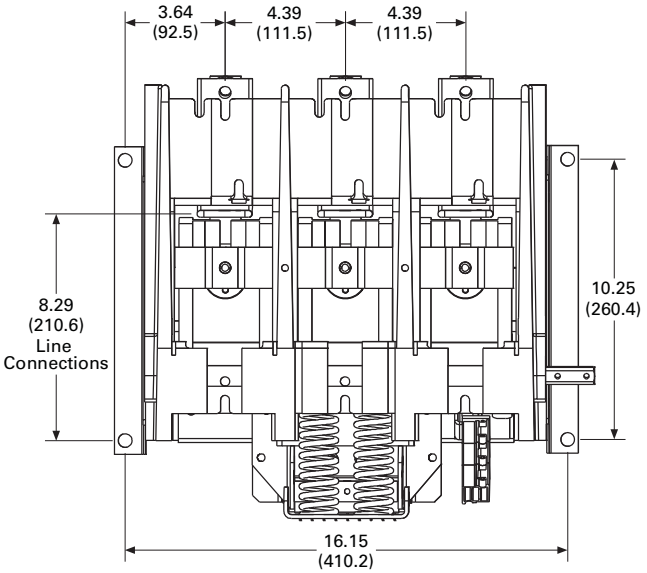
Dimensional Drawings 7.2 kV/800A

3

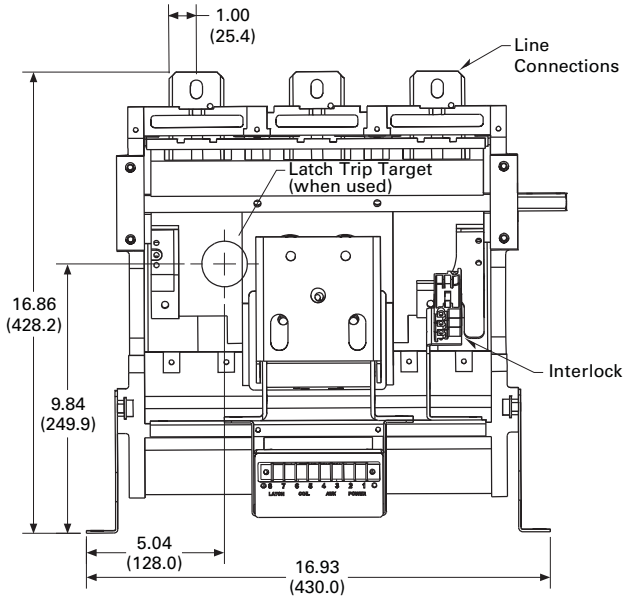
Side



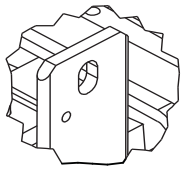
Top



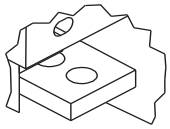
Front



Lug Terminal

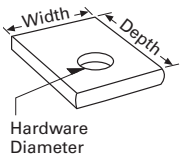


Detail A
Line Lug Terminal
Use 10 mm or 3/8 inch Bolt



Detail B
Load Lug Terminal
Use 10 mm or 3/8 inch Bolt

Lug Terminal



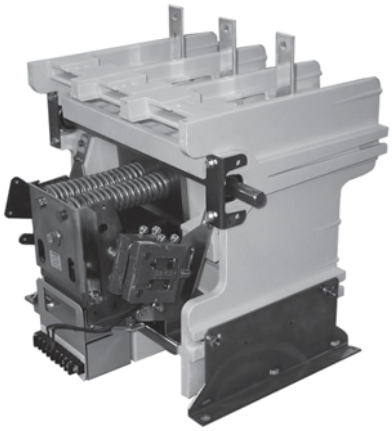
Upper Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
7.2 kV/800	1.75 (44.5)	2.00 (50.8)	10

Lower Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
7.2 kV/800	1.50 (38.1)	1.50 (38.1)	10

SL 15 kV/300A Medium Voltage Contactor



Contents

Description	*Page*
Product Overview	**V4-T3-56**
SL MV Power Contactor 7.2 kV/160–400A	**V4-T3-58**
SL MV Power Contactor 7.2 kV/800A	**V4-T3-67**
SL MV Power Contactor 15 kV/300A	
Options and Accessories	**V4-T3-72**
Technical Data and Specifications	**V4-T3-72**
Dimensions	**V4-T3-74**

SL MV Power Contactor 15 kV/300A

Product Description

- A single family of contactors for any medium voltage control application. Voltage range of 7200–15,000V
- 300A rating with induction motor horsepower ranges from 500 to 7500 hp
- Two different altitude versions
- Leading-edge vacuum technology
- Long life—200,000 electrical and 250,000 mechanical operations
- Special ordering allows unit to be factory pre-set to customer specification, including field kit installation
- Highest quality available—all contactors manufactured within state-of-the-art "ISO-Certified" facilities. 100% made in America

Application Description

Eaton's SL Medium Voltage Contactors starting applications:

- Squirrel-cage induction motors
- Synchronous motors
- Wound-rotor

Fully applicable to:

- Full voltage starting
- Reduced voltage starting

The perfect choice for harsh duty applications:

- Mining
- Pulp and paper
- HVAC
- Petrochemical
- Automotive
- Many others

Features, Benefits and Functions

Factory Installed Option Kit

- Mechanical latch—many coil voltages

Standards and Certifications

Acceptability

- NEMA
- ANSI
- IEC

Third-Party Verification

- UL
- CSA
- KEMA

Design and Test Standards

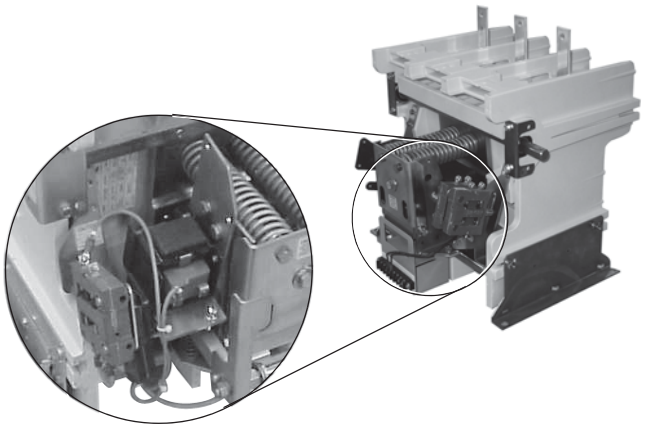
- UL 347, File No. E63257
- CSA
- ANSI/NEMA ICS 3
- IEC 60470

Product Selection

Contact Eaton for pricing.

Options and Accessories

SL Series—Accessory Options 15 kV/300A



Mechanical Latch Assembly 15 kV/300A

Mechanical Latch Option—SL Vacuum Contactor
Factory installed for 15 kV/300A SL Vacuum Contactor. Coil voltages available in a wide range of AC and DC selections.

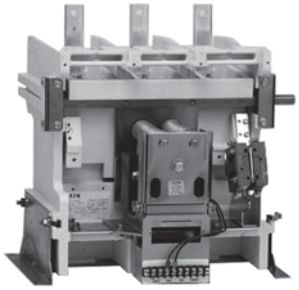
Technical Data and Specifications

The SL Contactor Ratings
- Voltages to 15,000V
- 300A
- Interrupting rating of 5000A

Control Voltages
- 110, 220 Vac, 50 Hz
- 120, 240 Vac, 60 Hz
- 125 Vdc

Dropout Time
- 50–330 ms
- Field selectable

Front and Rear View 15 kV/300A



Front View

Rear View

SL Series Fuses

Fuse Application Table for SL Contactors 15 kV/SL-300A

Motor FLA	Voltage	Suggested Eaton Fuse	Rating	Minimum Opening Time
50–300 ①	10,000–13,800	15BHCLS-400	400	130 ms

Notes

① For FLA >275, contact factory for maximum acceleration time.

Fuse selections based on LRC = FLA x 6 with acceleration time of 10 seconds except where otherwise noted.

SL Series Ratings

Type SL Vacuum Contactor Ratings 15 kV/300A

	Interrupting Rating		Application Table					
				Synchronous Motor Horsepower				
Rated Utilization Voltage	NEMA Unfused (E1) kA	NEMA Fused (E2) kA	Induction Motor Horsepower	(0.8 PF)	(1.0 PF)	Transformer kVA	Capacitor kVAR	Maximum Insulation Voltage
10,000–11,000	5	50 (950 MVA at 11,000V)	6000	6000	6750	5500	Consult factory	15,000
12,400–13,800	5	50 (1190 MVA at 13,800V)	7500	7500	8500	6800	Consult factory	15,000

Rating Specifications 15 kV/300A

Ampere Rating	15 kV/300A
Maximum Interrupting Current (Three operations—amperes)	5000
Rated Current	300
IEC Make-Break Capability—AC4 (Amperes) Make	3000
Break	3000

Product Specifications

15 kV/300A

- Short-time current
  - 30 seconds: 1800A
  - 1 second: 4500A
  - 8.7 ms (0.5 cycle) 25 kA peak
- Normal service altitude: –3281 to +6562 ft (–1000 to +2000m)
- Mechanical life: 250,000 operations
- Electrical life: 200,000 operations
- BIL (impulse withstand): 75 kV (1.2 x 50 microseconds)
- Dielectric strength: 36 kV rms (1 minute)
- Closing time (energization to contact touch): 80 ms
- Selectable opening times (de-energization to full open):
  - 50 ms (3 cycles)
  - 130 ms (8 cycles)
  - 250 ms (12 cycles)
  - 330 ms (20 cycles)
- Arcing time: 12 ms (0.75 cycle) or less
- Pickup voltage: 80% rated coil voltage
- Dropout voltage: 60% rated coil voltage
- Control voltages:
  - AC/Hz: 110/50, 120/60 Vac, 220/50, 240/60
  - DC: 125 Vdc
- Control circuit burden:
  - Closing (120/240): 1700/2600 VA
  - Holding (120/240): 80 VA
- Auxiliary contact rating:
  - 600V (maximum)
  - 10A continuous current
  - Making capacity
    - AC: 7200 VA
    - DC: 200 VA
  - Breaking capacity
    - AC: 720 VA
    - DC: 200 VA
- Latch (when specified):
  - Mechanical life: 250,000 operations
  - Trip voltage
    - DC: 24, 48, 96V
    - AC: 110/120, 220/240V, 50/60 Hz
  - Minimum trip voltage: 80% rated coil voltage
  - Trip burden
    - 24 Vdc: 1200 VA
    - 48 and 96 Vdc: 400 VA
    - 110 and 220 Vac: 500 VA
  - Trip time (2 cycles): 30 ms
- Weight: 95 lbs (43.1 kg)

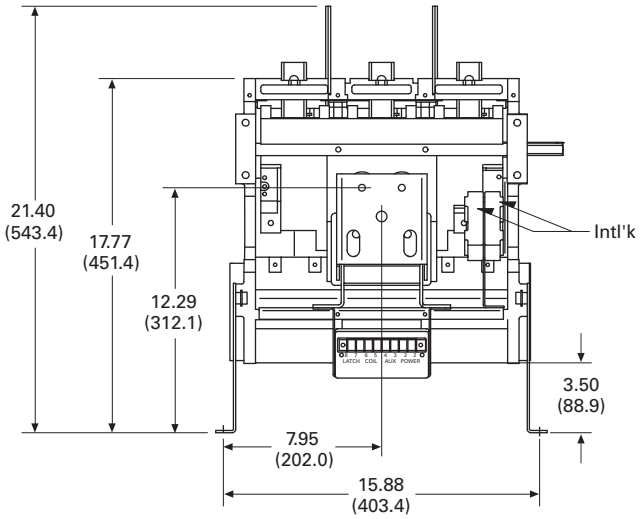
Dimensions

Approximate Dimensions in Inches (mm)

Dimensional Drawings 15 kV/300A

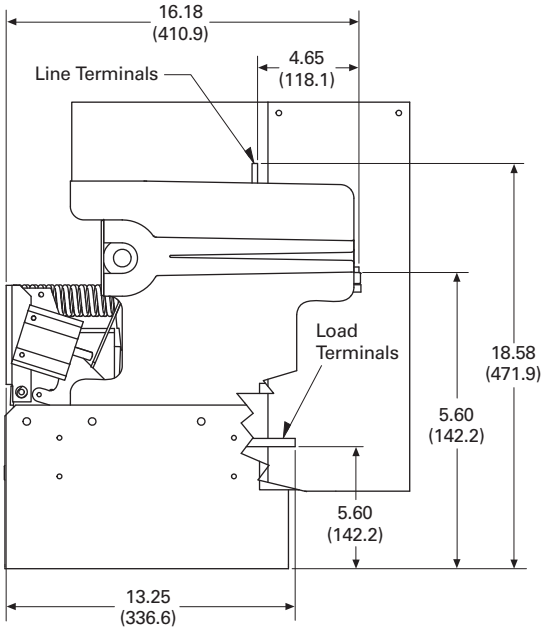
3

Front



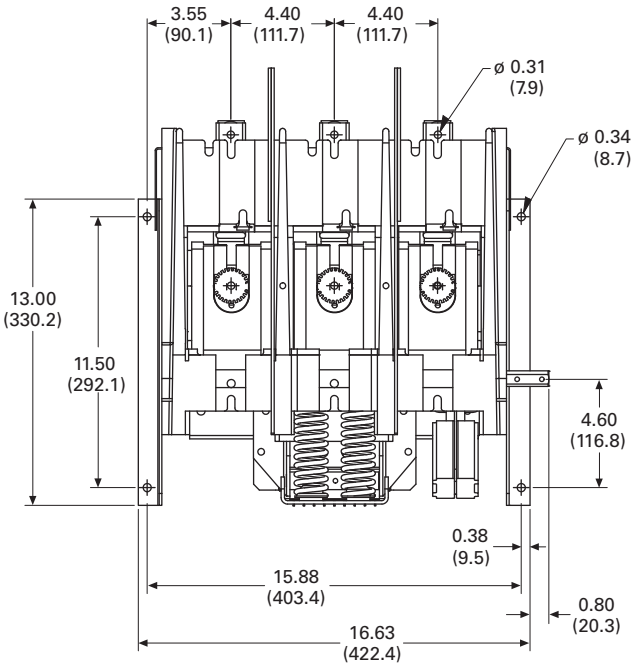
Front View

Side 15 kV/300A



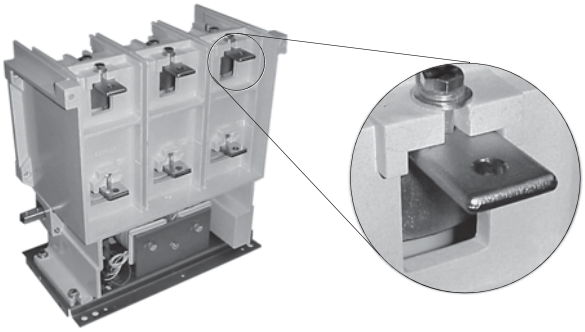
RH Side View

Top

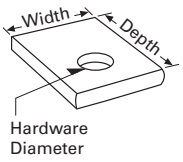


Top View

Lug Terminal



Lug Terminal



Upper Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
15 kV/300	1.25 (31.8)	1.25 (31.8)	10

Lower Lug Terminal

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
15 kV/300	1.50 (38.1)	1.25 (38.1)	10

Contents

Description

Fuses General

Product Overview

Power Fuse

Eaton's roots in the medium voltage power fuse business began over 75 years ago under Westinghouse® Electric. In 1935, Westinghouse introduced the medium voltage boric acid expulsion fuse followed by the medium voltage current limiting fuse. Even today, medium voltage fuses continue to use that core technology. Eaton continues to build on the technology legacy by engineering higher performance, cost-effective power fuse products.

Eaton's medium voltage fuses are manufactured and tested to the requirements of the C37-4X series of standards, which are maintained and updated regularly to maintain currency with industry practices. These standards are:

IEEE Std. C37.40™

IEEE Standard Service Conditions and Definitions for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories (ANSI).

IEEE Std. C37.41™

IEEE Standard Design Tests for High-Voltage (>1000V) Fuses, Fuse and Disconnecting Cutouts, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Fuse Links and Accessories used with These Devices (ANSI).

ANSI C37.42™

IEEE Standard Specifications for High-Voltage (>1000V) Expulsion-Type Distribution-Class Fuses, Fuse and Disconnecting Cutouts, Fuse Disconnecting Switches, and Fuse Links, and Accessories used with These Devices (ANSI).

ANSI C37.46

American National Standard for High Voltage Expulsion and Current Limiting Type Power Class Fuses and Fuse Disconnecting Switches.

ANSI C37.47

American National Standard for High Voltage Current Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches.

The following IEEE standards are also applicable to the fuse products covered in this publication:

IEEE Std. C37.48™

IEEE Guide for the Application, Operation, and Maintenance of High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories (ANSI).

IEEE Std. C37.48.1™

IEEE Guide for the Classification, Application, and Coordination of Current-Limiting Fuses with Rated Voltages 1–38 kV.

A better understanding of some fuse terminology will help you understand and select the correct fuse. The following is a brief overview of those terms.

Power vs. Distribution

The differentiation is intended to indicate the test conditions and where fuses are normally applied on an electrical system, based on specific requirements for generating sources, substations and distribution lines. Each class has its own unique set of voltage, current and construction requirements (see C37.42, .46 and .47).

Low vs. Medium vs. High Voltage

While fuses are defined in the ANSI standards as either low or high voltage, Eaton has elected to name their fuses to correspond with the equipment in which they are installed. Therefore, per ANSI C84, our fuses are named as follows:

- Low voltage—1000V and below
- Medium voltage—greater than 1000 to 69,000V
- High voltage—greater than 69,000V

Expulsion vs. Current Limiting (Definitions per ANSI C47.40-1993)

An expulsion fuse is a vented fuse in which the expulsion effect of the gases produced by internal arcing, either alone or aided by other mechanisms, results in current interruption.

An expulsion fuse is not current limiting and as a result limits the duration of a fault on the electrical system, not the magnitude.

A current limiting fuse is a fuse that, when its current responsive element is melted by a current within the fuse's specified current limiting range, abruptly introduces a high resistance to reduce current magnitude and duration, resulting in subsequent current interruption. Refer to Fuse Types Protection Range figure on **Page V4-T3-77** for a features comparison.

Fuse Types

There are three current limiting fuse types: Backup, General Purpose and Full Range. It is important that the user have an understanding of these definitions to ensure proper application of the fuse (see Fuse Types Protection Range figure on **Page V4-T3-77**).

Backup Fuses

A fuse capable of interrupting all currents from the maximum rated interrupting current down to the rated minimum interrupting current.

Backup fuses are always used in a series with another interrupting device capable of interrupting currents below the fuse's minimum interrupting current.

General Purpose Fuses

A fuse capable of interrupting all currents from the rated interrupting current down to the current that causes melting of the fusible element in no less than one hour.

General Purpose fuses are typically used to protect feeders and components such as transformers.

Full Range Fuses

A fuse capable of interrupting all currents from the rated interrupting current down to the minimum continuous current that causes melting of the fusible element, with the fuse applied at the maximum ambient temperature specified by the manufacturer.

General Fuse Component Terms

Fuse Refill Unit (of an Expulsion Fuse)

A fuse refill unit is a replaceable assembly containing the calibrated current-responsive fuse element and certain other items that facilitate current interruption. On its own, the refill unit has no interrupting ability. A refill unit must be mounted in a fuseholder with a spring assembly to form a refillable fuse unit. The refill unit is the section of the fuse that must be replaced after a fuse operation.

Fuseholder (of an Expulsion Fuse)

A fuseholder is a reusable holder that when equipped with a fuse refill unit forms a fuse unit, capable of interrupting an overload or fault current. A fuseholder is supplied with a spring and shunt assembly, necessary to complete the internal interrupting assembly. The spring and shunt assembly is supplied with the fuseholder but is also available as a replacement part, as it may need replacement after several of heavy operations.

Fuse Unit

A fuse unit is a replaceable unit or assembly that is able, on its own, to perform current interruption. In the case of a refillable fuse unit, the refill unit must be replaced after a fuse operation. Where a complete fuse unit is supplied from the factory, the complete fuse unit must be replaced after a fuse operation. All current-limiting fuses are fuse units.

Exhaust Control Device

When expulsion fuses are used in enclosures, exhaust control devices (filters, condensers or mufflers) are used to control the sound of the fuse operation, and to de-ionize and absorb the fuse exhaust products. These devices are normally supplied separately, because of different characteristics and ratings. They are reusable but may need replacement after several heavy operations.

Mounting

A mounting provides all the necessary parts to safely mount a fuse in its intended piece of equipment. The base is the metal support to which all other pieces attach. Insulators attach to the base and insulate the live fuse unit from the base and everything beyond the base. Live parts are the parts of the mounting that are energized once electricity is flowing. The live parts provide the means to hold the fuse unit in place, electrical contact, and a place to make line and load connections.

Non-Disconnect Mounting

A non-disconnect mounting does not provide a means for removing the fuse unit until the circuit is dead and the fuse unit can be removed manually. The fuse unit is held in place by friction through the use of fuse clips or by a cross bar.

Disconnect Mounting

The disconnect mounting allows the fuse unit to be removed (off load) using an insulated hook stick. The hookstick grabs a pull ring and disconnects the fuse unit, which may then be lifted out of its mounting.

Dropout Mounting

Dropout mountings are used in outdoor applications. The fuse unit is equipped with a mechanical trigger that unlatches the upper contact, allowing the fuse unit to drop out, increasing the dielectric separation, and providing visible indication of a blown fuse.

Live Parts

Live parts were briefly discussed as part of the "Mounting" definition. Everything above the insulators on the mounting excluding the fuse unit, fuse holder, and the fuse end fittings (if required) are considered the live parts. Fuse end fittings are discussed next and are not required with non-disconnect live parts, but are required and included with disconnect live parts. Live parts may be sold separately as replacement parts or for new OEM applications.

End Fittings

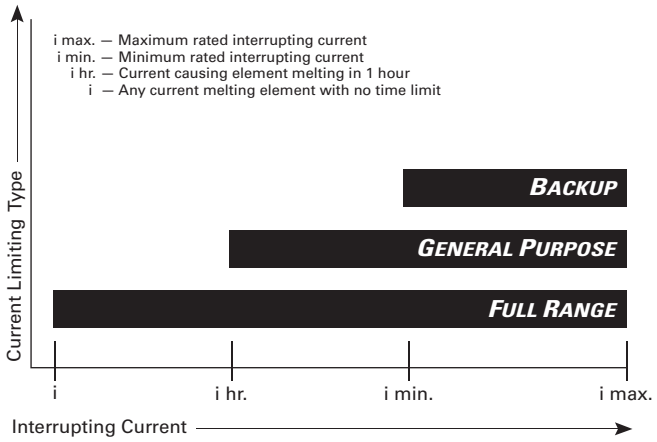
End fittings are metal parts that attach to each end of a fuse unit's ferrules (end caps). As previously mentioned, they are used solely with disconnect fuse applications or when converting a non-disconnect to a disconnect fuse configuration.

When end fittings are ordered, a fitting for each end of the fuse is included. Keep in mind that end fittings can become damaged in use and, therefore, are sold separately from the live parts when necessary. It is not necessary to purchase an entire set of live parts when only the end fittings are required.

General High Voltage Fuse Comparison

Expulsion	Current Limiting
Vented	Sealed
Electromechanical	Static
Interrupts at current zero	Limits fault current
Generally higher voltage and current application capabilities	Generally higher interrupting ratings
Different time/current characteristics	Different time/current characteristics

Fuse Types Protection Range



Contents

Description	*Page*
Catalog Number Selection	**V4-T3-79**
Product Selection	**V4-T3-80**

Product Description

Eaton's expulsion fuses use boric acid as the interrupting medium. Under a fault condition, arc heat decomposes the boric acid into water vapor. The water vapor blast deionizes the arc path preventing arc re-ignition after a natural current zero.

Type RBA indoor expulsion fuses must be fitted with a discharge filter or condenser, that moderates the discharge exhaust. The discharge filter limits the exhaust to a small and relatively inert amount of gas and lowers the noise level without affecting the fuse interrupting rating. Steam discharge, that can effect the interrupting, is fully restricted by the condenser.

Type RDB outdoor dropout fuses include an ejector spring that forces the arcing rod through the top of the fuse. The arcing rod strikes a latch on the mounting that forces the fuse to swing outward through a 180° arc into the dropout position.

Refill units can be field installed into RBA and RDB expulsion fuses. Once the operated unit has been removed, the separately purchased unit can be easily installed into the fuse holder.

Type DBU fuse units are designed for new and aftermarket utility applications. End fittings are available, in both indoor and outdoor versions, as well as live parts and mountings. Mufflers confine the arc within the fuse and substantially reduce the noise and exhaust when the fuse interrupts.

RBA E-Rated Refillable Boric Acid

RDB E-Rated Refillable Outdoor Dropout Boric Acid

DBU Dropout Boric Acid—for Use Indoors, Inside Switchgear or Outdoors

Accessories

The following accessories are available for expulsion fuses:

Mountings

Mountings include a base, porcelain or glass polyester insulators, and live parts. They help enable the fuse to be safely attached to the gear. Mountings can be either disconnect, nondisconnect or dropout. Non-disconnect mountings are available in bolt-on or clamp-type arrangements. Fuses may be vertical or underhung.

Live Parts

Live parts attach the fuse to the insulators and are considered part of the mounting. All parts above the insulators are live parts.

End Fittings

End fittings are metal parts that attach to each end of the fuse at the ferrules. They are used only on disconnect fuses or when converting a nondisconnect to a disconnect fuse.

Catalog Number Selection

Expulsion Fuse

Easy to Use, Easy to Order!
Eaton's fuse catalog numbering system makes it easy to order the right fuse. The catalog numbers are easy to remember, unique to each fuse, and are broken down in three descriptive segments: Fuse Type, Voltage Rating and Current Rating.

These Catalog numbers can be entered directly and easily:

- No change in order processing will occur if you use either a style number or its corresponding catalog number. You will get the same fuse
- If you are ordering a replacement for an older Westinghouse fuse, it will only have the style number. Order under this style number and you will get the correct fuse

Examples:

8RBA2-10E	8.3 max. kV, RBA-200 refill, 10E amperes
DBU17-30K	17.1 max. kV, DBU fuse unit, 30 amperes
15RBA8-INH	15.5 max. kV, RBA-800, indicating nondisconnect holder
RBA4-FLTR	RBA-400 filter

Expulsion Fuse Units

15 DBU 17 - 100 E

Maximum kV	Type	Maximum kV	Amperes		Speed
8	RBA	17	0.5	50	E
15	DBU	27	3	65	K
25	DBA	38	5	80	SE
38	RDB		7	100	
48	RBT		10	125	
72	BA		15	150	
92			20	200	
121			25	250	
145			30	300	
			40	400	

Expulsion Fuse Accessories

15 RBA2 - P NM

Maximum kV	Type	Insulator	Hardware	
8	RBA	G = Glass polyester	UM	= Underhung mounting
15	DBU	P = Porcelain	VM	= Vertical mounting
17	RDB	H = High BIL	DL	= Disconnect live parts
25	BA		NL	= Nondisconnect live parts
27			DH	= Disconnect holder
38			NH	= Nondisconnect holder
			NM	= Nondisconnect mounting
			UL	= Underhung live parts
			VL	= Vertical live parts
			I	= Indicating
			O	= Outdoor
			FLTR	= Filter
			COND	= Condenser
			MFLR	= Muffler
			SHNT	= Shunt and spring assembly

Product Selection

Contact Eaton for pricing.

Type RBA and RDB

Type 8RBA2 Expulsion Fuse Refill Units—8.3 kV Maximum (7.2 kV Nominal) 200A

RBA/RBT Refill Units

	Standard Speed (Fuse Refills)		Time Lag (Fuse Refills)		
Ampere Rating	**Catalog Number**	**Curve Reference 36-635**	**Catalog Number**	**Curve Reference 36-635**	**Approximate Shipping Weight Lbs (kg)**
10E	**8RBA2-10E**	1, 2	—	—	1.0 (0.45)
15E	**8RBA2-15E**	1, 2	—	—	1.0 (0.45)
20E	**8RBA2-20E**	1, 2	**8RBT2-20E**	3, 4	1.0 (0.45)
25E	**8RBA2-25E**	1, 2	**8RBT2-25E**	3, 4	1.0 (0.45)
30E	**8RBA2-30E**	1, 2	**8RBT2-30E**	3, 4	1.0 (0.45)
40E	**8RBA2-40E**	1, 2	**8RBT2-40E**	3, 4	1.0 (0.45)
50E	**8RBA2-50E**	1, 2	**8RBT2-50E**	3, 4	1.0 (0.45)
65E	**8RBA2-65E**	1, 2	**8RBT2-65E**	3, 4	1.0 (0.45)
80E	**8RBA2-80E**	1, 2	**8RBT2-80E**	3, 4	1.0 (0.45)
100E	**8RBA2-100E**	1, 2	**8RBT2-100E**	3, 4	1.0 (0.45)
125E	**8RBA2-125E**	1, 2	**8RBT2-125E**	3, 4	1.0 (0.45)
150E	**8RBA2-150E**	1, 2	**8RBT2-150E**	3, 4	1.0 (0.45)
200E	**8RBA2-200E**	1, 2	**8RBT2-200E**	3, 4	1.0 (0.45)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—8.3 kV Maximum (7.2 kV Nominal) 200A (For Use with 8RBA2 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

							Mounting (Including Live Parts Less Holder)		Live Parts	Fuse Filters and Condensers	Spring and Shunt Assy.
		Fuseholder		Voltage (kV)			Porcelain Insulator	Glass Polyester			
Ampere Rating	**Style**	**Non-Indicating Catalog Number**	**Indicating Catalog Number**	**Nominal**	**Maximum**	**LIWL (BIL)**	**Catalog Number**	**Catalog Number**	**Catalog Number**	**Catalog Number**	**Catalog Number**
10E–200E	Non-disconnect	**8RBA2-NH**	**8RBA2-INH**	4.8	5.5	60	**5RBA2-PNM**	**5RBA2-GNM**	**15RBA2-NL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	
	Non-disconnect	**8RBA2-NH**	**8RBA2-INH**	7.2	8.3	75	**8RBA2-PNM**	**8RBA2-GNM**	**15RBA2-NL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	
	Disconnect	**8RBA2-DH**	**BRBA2-IDH**	4.8	5.5	60	**5RBA2-PDM**	**5RBA2-GDM**	**14RBA2-DL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	
	Disconnect	**8RBA2-DH**	**BRBA2-IDH**	7.2	8.3	75	**8RBA2-PDM**	**8RBA2-GDM**	**14RBA2-DL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	
	Bolt-in	—	**8RBA2-INH-B**	4.8	5.5	60	**5RBA8-PNM**	**5RBA8-GNM**	**15RBA8-NL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	
	Bolt-in	—	**8RBA2-INH-B**	7.2	8.3	75	**8RBA8-PNM**	**8RBA8-GNM**	**15RBA8-NL**	**RBA2-FLTR**	**8RBA2-SHNT**
										RBA2-COND	

Type RDB Expulsion Fuses for Use Outdoors—8.3 kV Maximum (7.2 kV Nominal) 200A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

						Mounting (Including Live Parts Less Holder)		Live Parts		Spring and Shunt Assy.
		Fuseholder	Voltage (kV)			Vertical (180°) Mounting	Underhung (90°) Mounting	Vertical	Underhung	
Ampere Rating	**Style**	**Catalog Number**	**Nominal**	**Maximum**	**LIWL (BIL)**	**Catalog Number**	**Catalog Number**	**Catalog Number**	**Catalog Number**	**Catalog Number**
10E–200E	Dropout	**8RDB2-DH**	7.2	8.3	95	**8RDB2-VM**	**8RDB2-UM**	**RDB2-VL**	**RDB2-UL**	**8RDB2-SHNT**
	Dropout	**8RDB2-DH**	7.2	8.3	110	**8RDB2-HVM**	**8RDB2-HUM**	**RDB2-VL**	**RDB2-UL**	**8RDB2-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 8RBA4 Expulsion Fuse Refill Units—8.3 kV Maximum (7.2 kV Nominal) 400A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
0.5	**8RBA4-.5**	5, 6	—	—	2.1 (0.95)
3	**8RBA4-3**	5, 6	—	—	2.1 (0.95)
5E	**8RBA4-5E**	5, 6	—	—	2.1 (0.95)
7E	**8RBA4-7E**	5, 6	—	—	2.1 (0.95)
10E	**8RBA4-10E**	5,6	—	—	2.1 (0.95)
15E	**8RBA4-15E**	5, 6	—	—	2.1 (0.95)
20E	**8RBA4-20E**	5, 6	**8RBT4-20E**	7, 8	2.1 (0.95)
25E	**8RBA4-25E**	5, 6	**8RBT4-25E**	7, 8	2.1 (0.95)
30E	**8RBA4-30E**	5, 6	**8RBT4-30E**	7, 8	2.1 (0.95)
40E	**8RBA4-40E**	5, 6	**8RBT4-40E**	7, 8	2.1 (0.95)
50E	**8RBA4-50E**	5, 6	**8RBT4-50E**	7, 8	2.1 (0.95)
65E	**8RBA4-65E**	5, 6	**8RBT4-65E**	7, 8	2.1 (0.95)
80E	**8RBA4-80E**	5, 6	**8RBT4-80E**	7, 8	2.1 (0.95)
100E	**8RBA4-100E**	5, 6	**8RBT4-100E**	7, 8	2.1 (0.95)
125E	**8RBA4-125E**	5, 6	**8RBT4-125E**	7, 8	2.1 (0.95)
150E	**8RBA4-150E**	5, 6	**8RBT4-150E**	7, 8	2.1 (0.95)
200E	**8RBA4-200E**	5, 6	**8RBT4-200E**	7, 8	2.1 (0.95)
250E	**8RBA4-250E**	5, 6	**8RBT4-250E**	10, 11	2.1 (0.95)
300E	**8RBA4-300E**	5, 6	**8RBT4-300E**	10, 11	2.1 (0.95)
400E	**8RBA4-400E**	5, 6	**8RBT4-400E**	10, 11	2.1 (0.95)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—8.3 kV Maximum (7.2 kV Nominal) 400A (For Use with 8RBA4 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–400E	Non-disconnect	**8RBA4-NH**	**8RBA4-INH**	4.8	5.5	60	**5RBA4-PNM**	**5RBA4-GNM**	**15RBA4-NL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	
	Non-disconnect	**8RBA4-NH**	**8RBA4-INH**	7.2	8.3	75	**8RBA4-PNM**	**8RBA4-GNM**	**15RBA4-NL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	
	Disconnect	**8RBA4-DH**	**BRBA2-IDH**	4.8	5.5	60	**5RBA4-PDM**	**5RBA4-GDM**	**14RBA4-DL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	
	Disconnect	**8RBA4-DH**	**BRBA2-IDH**	7.2	8.3	75	**8RBA4-PDM**	**8RBA4-GDM**	**14RBA4-DL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	
	Bolt-in	—	**8RBA2-INH-B**	4.8	5.5	60	**5RBA8-PNM**	**5RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	
	Bolt-in	—	**8RBA4-INH-B**	7.2	8.3	75	**8RBA8-PNM**	**8RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR**	**8RBA4-SHNT**
										RBA4-COND	

Type RDB Expulsion Fuses for Use Outdoors—8.3 kV Maximum (7.2 kV Nominal) 400A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–400E	Dropout	**8RDB4-DH**	7.2	8.3	95	**8RDB4-VM**	**8RDB4-UM**	**RDB4-VL**	**RDB4-UL**	**8RDB4-SHNT**
	Dropout	**8RDB4-DH**	7.2	8.3	110	**8RDB4-HVM**	**8RDB4-HUM**	**RDB4-VL**	**RDB4-UL**	**8RDB4-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 8RBA4 Expulsion Fuse Refill Units Used in 8RBA8/8RDB4 Fuseholders—8.3 kV Maximum (7.2 kV Nominal) 800A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Quantity	Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Quantity	Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
450E	2	**8RBA4-250E**	9	2	**8RBT4-250E**	12	①
540E	2	**8RBA4-300E**	9	2	**8RBT4-300E**	12	①
720E	2	**8RBA4-400E**	9	2	**8RBT4-400E**	12	①

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—8.3 kV Maximum (7.2 kV Nominal) 800A (For Use with 8RBA8 Fuseholders) ②

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
450E–720E	Non-disconnect	**8RBA8-NH**	**8RBA8-INH**	4.8	5.5	60	**5RBA8-PNM**	**5RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR** ③ **RBA4-COND** ③	**8RBA4-SHNT**
	Non-disconnect	**8RBA8-NH**	**8RBA8-INH**	7.2	8.3	75	**8RBA8-PNM**	**8RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR** ③ **RBA4-COND** ③	**8RBA4-SHNT**

Type RDB Expulsion Fuses for Use Outdoors—8.3 kV Maximum (7.2 kV Nominal) 800A ④

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
450E–720E	Disconnect	**8RDB4-NH**	7.2	8.3	95	**8RDB8-VM**	**8RDB8-UM**	**RDB8-VL**	**RDB8-UL**	**8RDB4-SHNT**
	Disconnect	**8RDB4-NH**	7.2	8.3	110	**8RDB8-HVM**	**8RDB8-HUM**	**RDB8-VL**	**RDB8-UL**	**8RDB4-SHNT**

Notes

① Requires two fuse refills as shown. Price each refill individually. Example: To order refill units for a 720E, 8.3 kV fuse, order two pieces of an 8RBA4-400E.

② For new installation, order two refills (Standard or Time Lag), one fuseholder, one mounting, and two filters or condensers per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

③ Two filters or condensers required.

④ For new installation, order two refills (Standard or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 15RBA2 Expulsion Fuse Refill Units—15.5 kV Maximum (14.4 kV Nominal) 200A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
10E	**15RBA2-10E**	1, 2	—	—	1.1 (0.5)
15E	**15RBA2-15E**	1, 2	—	—	1.1 (0.5)
20E	**15RBA2-20E**	1, 2	**15RBT2-20E**	3, 4	1.1 (0.5)
25E	**15RBA2-25E**	1, 2	**15RBT2-25E**	3, 4	1.1 (0.5)
30E	**15RBA2-30E**	1, 2	**15RBT2-30E**	3, 4	1.1 (0.5)
40E	**15RBA2-40E**	1, 2	**15RBT2-40E**	3, 4	1.1 (0.5)
50E	**15RBA2-50E**	1, 2	**15RBT2-50E**	3, 4	1.1 (0.5)
65E	**15RBA2-65E**	1, 2	**15RBT2-65E**	3, 4	1.1 (0.5)
80E	**15RBA2-80E**	1, 2	**15RBT2-80E**	3, 4	1.1 (0.5)
100E	**15RBA2-100E**	1, 2	**15RBT2-100E**	3, 4	1.1 (0.5)
125E	**15RBA2-125E**	1, 2	**15RBT2-125E**	3, 4	1.1 (0.5)
150E	**15RBA2-150E**	1, 2	**15RBT2-150E**	3, 4	1.1 (0.5)
200E	**15RBA2-200E**	1, 2	**15RBT2-200E**	3, 4	1.1 (0.5)

Type RBA Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 200A (For Use with 15RBA2 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Non-disconnect	**15RBA2-NH**	**15RBA2-INH**	13.8	15.5	95	**14RBA2-PNM**	**14RBA2-GNM**	**15RBA2-NL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**
	Non-disconnect	**15RBA2-NH**	**15RBA2-INH**	13.8	15.5	110	**15RBA2-PNM**	—	**15RBA2-NL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**
	Disconnect	**15RBA2-DH**	**15RBA2-IDH**	13.8	15.5	95	**14RBA2-PDM**	**14RBA2-GDM**	**38RBA2-DL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**
	Disconnect	**15RBA2-DH**	**15RBA2-IDH**	13.8	15.5	110	**15RBA2-PDM**	—	**38RBA2-DL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**
	Bolt-in	—	**15RBA2-INH-B**	13.8	15.5	95	**14RBA8-PNM**	**14RBA8-GNM**	**15RBA8-NL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**
	Bolt-in	—	**15RBA2-INH-B**	13.8	15.5	110	**15RBA8-PNM**	**15RBA8-GNM**	**15RBA8-NL**	**RBA2-FLTR** **RBA2-COND**	**15RBA2-SHNT**

Type RDB Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 200A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Dropout	**15RDB2-DH**	13.8	15.5	110	**15RDB2-VM**	**15RDB2-UM**	**RDB2-VL**	**RDB2-UL**	**15RDB2-SHNT**
	Dropout	**15RDB2-DH**	13.8	15.5	150	**15RDB2-HVM**	**15RDB2-HUM**	**RDB2-VL**	**RDB2-UL**	**15RDB2-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 15RBA4 Expulsion Fuse Refill Units—15.5 kV Maximum (14.4 kV Nominal) 400A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
0.5	**15RBA4-.5**	5, 6	—	—	2.3 (1.0)
3	**15RBA4-3**	5, 6	—	—	2.3 (1.0)
5E	**15RBA4-5E**	5, 6	—	—	2.3 (1.0)
7E	**15RBA4-7E**	5, 6	—	—	2.3 (1.0)
10E	**15RBA4-10E**	5,6	—	—	2.3 (1.0)
15E	**15RBA4-15E**	5, 6	—	—	2.3 (1.0)
20E	**15RBA4-20E**	5, 6	**15RBT4-20E**	7, 8	2.3 (1.0)
25E	**15RBA4-25E**	5, 6	**15RBT4-25E**	7, 8	2.3 (1.0)
30E	**15RBA4-30E**	5, 6	**15RBT4-30E**	7, 8	2.3 (1.0)
40E	**15RBA4-40E**	5, 6	**15RBT4-40E**	7, 8	2.3 (1.0)
50E	**15RBA4-50E**	5, 6	**15RBT4-50E**	7, 8	2.3 (1.0)
65E	**15RBA4-65E**	5, 6	**15RBT4-65E**	7, 8	2.3 (1.0)
80E	**15RBA4-80E**	5, 6	**15RBT4-80E**	7, 8	2.3 (1.0)
100E	**15RBA4-100E**	5, 6	**15RBT4-100E**	7, 8	2.3 (1.0)
125E	**15RBA4-125E**	5, 6	**15RBT4-125E**	7, 8	2.3 (1.0)
150E	**15RBA4-150E**	5, 6	**15RBT4-150E**	7, 8	2.3 (1.0)
200E	**15RBA4-200E**	5, 6	**15RBT4-200E**	7, 8	2.3 (1.0)
250E	**15RBA4-250E**	5, 6	**15RBT4-250E**	10, 11	2.3 (1.0)
300E	**15RBA4-300E**	5, 6	**15RBT4-300E**	10, 11	2.3 (1.0)
400E	**15RBA4-400E**	5, 6	**15RBT4-400E**	10, 11	2.3 (1.0)

Type RBA Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 400A (For Use with 15RBA4 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–400E	Non-disconnect	**15RBA4-NH**	**15RBA4-INH**	13.8	15.5	95	**14RBA4-PNM**	**14RBA4-GNM**	**15RBA4-NL**	**RBA4-FLTR** **RBA4-COND**	**15RBA4-SHNT**
	Non-disconnect	**15RBA4-NH**	**15RBA4-INH**	13.8	15.5	110	**15RBA4-PNM**	—	**15RBA4-NL**	**RBA4-FLTR** **RBA4-COND**	**15RBA4-SHNT**
	Disconnect	**15RBA4-DH**	**15RBA2-IDH**	13.8	15.5	95	**14RBA4-PDM**	**14RBA4-GDM**	**15RBA4-DL**	**RBA4-FLTR** **RBA4-COND**	**15RBA4-SHNT**
	Disconnect	**15RBA4-DH**	**15RBA2-IDH**	13.8	15.5	110	**15RBA4-PDM**	—	**15RBA4-DL**	**RBA4-FLTR** **RBA4-COND**	**15RBA4-SHNT**
	Bolt-in	—	**15RBA4-INH-B**	13.8	15.5	95	**14RBA8-PNM**	**14RBA8-GNM**	**15RBA8-NL**	**RBA-FLTR** **RBA4-COND**	**15RBA4-SHNT**
	Bolt-in	—	**15RBA4-INH-B**	13.8	15.5	110	**15RBA8-PNM**	**15RBA8-GNM**	**15RBA8-NL**	**RBA-FLTR** **RBA4-COND**	**15RBA4-SHNT**

Type RDB Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 400A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–400E	Dropout	**15RDB4-DH**	13.8	15.5	110	**15RDB4-VM**	**15RDB4-UM**	**RDB4-VL**	**RDB4-UL**	**15RDB4-SHNT**
	Dropout	**15RDB4-DH**	13.8	15.5	150	**15RDB4-HVM**	**15RDB4-HUM**	**RDB4-VL**	**RDB4-UL**	**15RDB4-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 15RBA4 Expulsion Fuse Refill Units Used in 15RBA8/15RDB4 Fuseholders—15.5 kV Maximum (14.4 kV Nominal) 800A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Quantity	Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Quantity	Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
450E	2	**15RBA4-250E**	9	2	**15RBT4-250E**	12	①
540E	2	**15RBA4-300E**	9	2	**15RBT4-300E**	12	①
720E	2	**15RBA4-400E**	9	2	**15RBT4-400E**	12	①

Type RBA Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 800A (For Use with 15RBA8 Fuseholders) ②

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
450E–720E	Non-disconnect	**15RBA8-NH**	**15RBA8-INH**	13.8	15.5	95	**14RBA8-PNM**	**14RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR** ③ **RBA4-COND** ③	**15RBA4-SHNT**
	Non-disconnect	**15RBA8-NH**	**15RBA8-INH**	13.8	15.5	110	**15RBA8-PNM**	**14RBA8-GNM**	**15RBA8-NL**	**RBA4-FLTR** ③ **RBA4-COND** ③	**15RBA4-SHNT**

Type RDB Expulsion Fuses for Use Outdoors—15.5 kV Maximum (14.4 kV Nominal) 800A ④

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
450E–720E	Disconnect	**15RDB4-NH**	13.8	15.5	110	**15RDB8-VM**	**15RDB8-UM**	**RDB8-VL**	**RDB8-UL**	**15RDB4-SHNT**
	Disconnect	**15RDB4-NH**	13.8	15.5	150	**15RDB8-HVM**	**15RDB8-HUM**	**RDB8-VL**	**RDB8-UL**	**15RDB4-SHNT**

Notes

① Requires two fuse refills as shown. Price each refill individually. Example: To order refill units for a 720E, 15 kV fuse, order two pieces of an 8RBA4-400E.

② For new installation, order two refills (Standard or Time Lag), one fuseholder, one mounting, and two filters or condensers per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

③ Two filters or condensers required.

④ For new installation, order two refills (Standard or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 25RBA2 Expulsion Fuse Refill Units—25.5 kV Maximum (23.0 kV Nominal) 200A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
10E	**25RBA2-10E**	1, 2	—	—	1.3 (0.6)
15E	**25RBA2-15E**	1, 2	—	—	1.3 (0.6)
20E	**25RBA2-20E**	1, 2	**25RBT2-20E**	3, 4	1.3 (0.6)
25E	**25RBA2-25E**	1, 2	**25RBT2-25E**	3, 4	1.3 (0.6)
30E	**25RBA2-30E**	1, 2	**25RBT2-30E**	3, 4	1.3 (0.6)
40E	**25RBA2-40E**	1, 2	**25RBT2-40E**	3, 4	1.3 (0.6)
50E	**25RBA2-50E**	1, 2	**25RBT2-50E**	3, 4	1.3 (0.6)
65E	**25RBA2-65E**	1, 2	**25RBT2-65E**	3, 4	1.3 (0.6)
80E	**25RBA2-80E**	1, 2	**25RBT2-80E**	3, 4	1.3 (0.6)
100E	**25RBA2-100E**	1, 2	**25RBT2-100E**	3, 4	1.3 (0.6)
125E	**25RBA2-125E**	1, 2	**25RBT2-125E**	3, 4	1.3 (0.6)
150E	**25RBA2-150E**	1, 2	**25RBT2-150E**	3, 4	1.3 (0.6)
200E	**25RBA2-200E**	1, 2	**25RBT2-200E**	3, 4	1.3 (0.6)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—25.5 kV Maximum (23.0 kV Nominal) 200A (For Use with 25RBA2 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Non-disconnect	**25RBA2-NH**	**25RBA2-INH**	23.0	25.5	150	**25RBA2-PNM**	—	**38RBA2-NL**	**RBA2-FLTR**	**25RBA2-SHNT**
										RBA2-COND	
	Non-disconnect	**25RBA2-NH**	**25RBA2-INH**	23.0	25.5	150	**25RBA2-PNM**	—	**38RBA2-NL**	**RBA2-FLTR**	**25RBA2-SHNT**
										RBA2-COND	
	Disconnect	**25RBA2-DH**	**25RBA2-IDH**	23.0	25.5	150	**25RBA2-PDM**	—	**38RBA2-DL**	**RBA2-FLTR**	**25RBA2-SHNT**
										RBA2-COND	
	Disconnect	**25RBA2-DH**	**25RBA2-IDH**	23.0	25.5	150	**25RBA2-PDM**	—	**38RBA2-DL**	**RBA2-FLTR**	**25RBA2-SHNT**
										RBA2-COND	
	Bolt-in	—	**25RBA2-INH-B**	23.0	25.5	150	**25RBA8-PNM**	**24RBA8-GNM**	**38RBA8-NL**	**RBA2-FLTR**	**25RBA2-SHNT**
										RBA2-COND	

Type RDB Expulsion Fuses for Use Outdoors—25.5 kV Maximum (23.0 kV Nominal) 200A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Dropout	**25RDB2-DH**	23.0	25.5	150	**25RDB2-VM**	**25RDB2-UM**	**RDB2-VL**	**RDB2-UL**	**25RDB2-SHNT**
	Dropout	**25RDB2-DH**	23.0	25.5	200	**25RDB2-HVM**	**25RDB2-HUM**	**RDB2-VL**	**RDB2-UL**	**25RDB2-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 25RBA4 Expulsion Fuse Refill Units—25.5 kV Maximum (23.0 kV Nominal) 400A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
0.5	**25RBA4-.5**	5, 6	—	—	2.7 (1.2)
3	**25RBA4-3**	5, 6	—	—	2.7 (1.2)
5E	**25RBA4-5E**	5, 6	—	—	2.7 (1.2)
7E	**25RBA4-7E**	5, 6	—	—	2.7 (1.2)
10E	**25RBA4-10E**	5,6	—	—	2.7 (1.2)
15E	**25RBA4-15E**	5, 6	—	—	2.7 (1.2)
20E	**25RBA4-20E**	5, 6	**25RBT4-20E**	7, 8	2.7 (1.2)
25E	**25RBA4-25E**	5, 6	**25RBT4-25E**	7, 8	2.7 (1.2)
30E	**25RBA4-30E**	5, 6	**25RBT4-30E**	7, 8	2.7 (1.2)
40E	**25RBA4-40E**	5, 6	**25RBT4-40E**	7, 8	2.7 (1.2)
50E	**25RBA4-50E**	5, 6	**25RBT4-50E**	7, 8	2.7 (1.2)
65E	**25RBA4-65E**	5, 6	**25RBT4-65E**	7, 8	2.7 (1.2)
80E	**25RBA4-80E**	5, 6	**25RBT4-80E**	7, 8	2.7 (1.2)
100E	**25RBA4-100E**	5, 6	**25RBT4-100E**	7, 8	2.7 (1.2)
125E	**25RBA4-125E**	5, 6	**25RBT4-125E**	7, 8	2.7 (1.2)
150E	**25RBA4-150E**	5, 6	**25RBT4-150E**	7, 8	2.7 (1.2)
200E	**25RBA4-200E**	5, 6	**25RBT4-200E**	7, 8	2.7 (1.2)
250E	**25RBA4-250E**	5, 6	**25RBT4-250E**	10, 11	2.7 (1.2)
300E	**25RBA4-300E**	5, 6	**25RBT4-300E**	10, 11	2.7 (1.2)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—25.5 kV Maximum (23.0 kV Nominal) 400A (For Use with 25RBA4 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–300E	Non-disconnect	**25RBA4-NH**	**25RBA4-INH**	23.0	25.5	150	**25RBA4-PNM**	—	**38RBA4-NL**	**RBA4-FLTR**	**25RBA4-SHNT**
										RBA4-COND	
	Non-disconnect	**25RBA4-NH**	**25RBA4-INH**	23.0	25.5	150	**25RBA4-PNM**	—	**38RBA4-NL**	**RBA4-FLTR**	**25RBA4-SHNT**
										RBA4-COND	
	Disconnect	**25RBA4-DH**	**25RBA2-IDH**	23.0	25.5	150	**25RBA4-PDM**	—	**38RBA4-DL**	**RBA4-FLTR**	**25RBA4-SHNT**
										RBA4-COND	
	Disconnect	**25RBA4-DH**	**25RBA2-IDH**	23.0	25.5	150	**25RBA4-PDM**	—	**38RBA4-DL**	**RBA4-FLTR**	**25RBA4-SHNT**
										RBA4-COND	
	Bolt-in	—	**25RBA4-INH-B**	23.0	25.5	150	**25RBA8-PNM**	**25RBA8-GNM**	**38RBA8-NL**	**RBA4-FLTR**	**25RBA4-SHNT**
										RBA4-COND	

Type RDB Expulsion Fuses for Use Outdoors—25.5 kV Maximum (23.0 kV Nominal) 400A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–300E	Dropout	**25RDB4-DH**	23.0	25.5	150	**25RDB4-VM**	**25RDB4-UM**	**RDB4-VL**	**RDB4-UL**	**25RDB4-SHNT**
	Dropout	**25RDB4-DH**	23.0	25.5	200	**25RDB4-HVM**	**25RDB4-HUM**	**RDB4-VL**	**RDB4-UL**	**25RDB4-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase.
Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase.
Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 25RBA4 Expulsion Fuse Refill Units Used in 25RBA8/15RDB4 Fuseholders—25.5 kV Maximum (23.0 kV Nominal) 800A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Quantity	Standard Speed (Fuse Refills) Catalog Number	Standard Speed (Fuse Refills) Curve Reference 36-635	Time Lag (Fuse Refills) Quantity	Time Lag (Fuse Refills) Catalog Number	Time Lag (Fuse Refills) Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
450E	2	**25RBA4-250E**	9	2	**25RBT4-250E**	12	①
540E	2	**25RBA4-300E**	9	2	**25RBT4-300E**	12	①

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—25.5 kV Maximum (23.0 kV Nominal) 800A (For Use with 25RBA8 Fuseholders) ②

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
450E–540E	Non-disconnect	**25RBA8-NH**	**25RBA8-INH**	23.0	25.5	150	**25RBA8-PNM**	—	**38RBA8-NL**	**RBA4-FLTR** ③	**25RBA4-SHNT**
										RBA4-COND ③	
	Non-disconnect	**25RBA8-NH**	**25RBA8-INH**	23.0	25.5	150	**25RBA8-PNM**	—	**38RBA8-NL**	**RBA4-FLTR** ③	**25RBA4-SHNT**
										RBA4-COND ③	

Type RDB Expulsion Fuses for Use Outdoors—25.5 kV Maximum (23.0 kV Nominal) 800A ④

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
450E–540E	Disconnect	**25RDB4-NH**	23.0	25.5	150	**25RDB8-VM**	**25RDB8-UM**	**RDB8-VL**	**RDB8-UL**	**25RDB4-SHNT**
	Disconnect	**25RDB4-NH**	23.0	25.5	200	**25RDB8-HVM**	**25RDB8-HUM**	**RDB8-VL**	**RDB8-UL**	**25RDB4-SHNT**

Notes

① Requires two fuse refills as shown. Price each refill individually. Example: To order refill units for a 720E, 25 kV fuse, order two pieces of an 8RBA4-400E.

② For new installation, order two refills (Standard or Time Lag), one fuseholder, one mounting, and two filters or condensers per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

③ Two filters or condensers required.

④ For new installation, order two refills (Standard or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 38RBA2 Expulsion Fuse Refill Units—38.0 kV Maximum (34.5 kV Nominal) 200A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
10E	**38RBA2-10E**	1, 2	—	—	1.4 (0.6)
15E	**38RBA2-15E**	1, 2	—	—	1.4 (0.6)
20E	**38RBA2-20E**	1, 2	**38RBT2-20E**	3, 4	1.4 (0.6)
25E	**38RBA2-25E**	1, 2	**38RBT2-25E**	3, 4	1.4 (0.6)
30E	**38RBA2-30E**	1, 2	**38RBT2-30E**	3, 4	1.4 (0.6)
40E	**38RBA2-40E**	1, 2	**38RBT2-40E**	3, 4	1.4 (0.6)
50E	**38RBA2-50E**	1, 2	**38RBT2-50E**	3, 4	1.4 (0.6)
65E	**38RBA2-65E**	1, 2	**38RBT2-65E**	3, 4	1.4 (0.6)
80E	**38RBA2-80E**	1, 2	**38RBT2-80E**	3, 4	1.4 (0.6)
100E	**38RBA2-100E**	1, 2	**38RBT2-100E**	3, 4	1.4 (0.6)
125E	**38RBA2-125E**	1, 2	**38RBT2-125E**	3, 4	1.4 (0.6)
150E	**38RBA2-150E**	1, 2	**38RBT2-150E**	3, 4	1.4 (0.6)
200E	**38RBA2-200E**	1, 2	**38RBT2-200E**	3, 4	1.4 (0.6)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 200A (For Use with 38RBA2 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Non-disconnect	**38RBA2-NH**	**38RBA2-INH**	34.5	38.0	150	**38RBA2-PNM**	—	**38RBA2-NL**	**RBA2-FLTR**	**38RBA2-SHNT**
										RBA2-COND	
	Non-disconnect	**38RBA2-NH**	**38RBA2-INH**	34.5	38.0	150	**38RBA2-PNM**	—	**38RBA2-NL**	**RBA2-FLTR**	**38RBA2-SHNT**
										RBA2-COND	
	Disconnect	**38RBA2-DH**	**38RBA2-IDH**	34.5	38.0	150	**38RBA2-PDM**	—	**38RBA2-DL**	**RBA2-FLTR**	**38RBA2-SHNT**
										RBA2-COND	
	Disconnect	**38RBA2-DH**	**38RBA2-IDH**	34.5	38.0	150	**38RBA2-PDM**	—	**38RBA2-DL**	**RBA2-FLTR**	**38RBA2-SHNT**
										RBA2-COND	
	Bolt-in	—	**38RBA2-INH-B**	34.5	38.0	150	**38RBA8-PNM**	**38RBA8-GNM**	**38RBA8-NL**	**RBA2-FLTR**	**38RBA2-SHNT**
										RBA2-COND	

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 200A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
10E–200E	Dropout	**38RDB2-DH**	34.5	38.0	200	**38RDB2-VM**	**38RDB2-UM**	**RDB2-VL**	**RDB2-UL**	**38RDB2-SHNT**
	Dropout	**38RDB2-DH**	34.5	38.0	250	**38RDB2-HVM**	**38RDB2-HUM**	**RDB2-VL**	**RDB2-UL**	**38RDB2-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 38RBA4 Expulsion Fuse Refill Units—38.0 kV Maximum (34.5 kV Nominal) 400A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Catalog Number	Curve Reference 36-635	Time Lag (Fuse Refills) Catalog Number	Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
0.5	**38RBA4-.5**	5, 6	—	—	3.1 (1.4)
3	**38RBA4-3**	5, 6	—	—	3.1 (1.4)
5E	**38RBA4-5E**	5, 6	—	—	3.1 (1.4)
7E	**38RBA4-7E**	5, 6	—	—	3.1 (1.4)
10E	**38RBA4-10E**	5,6	—	—	3.1 (1.4)
15E	**38RBA4-15E**	5, 6	—	—	3.1 (1.4)
20E	**38RBA4-20E**	5, 6	**38RBT4-20E**	7, 8	3.1 (1.4)
25E	**38RBA4-25E**	5, 6	**38RBT4-25E**	7, 8	3.1 (1.4)
30E	**38RBA4-30E**	5, 6	**38RBT4-30E**	7, 8	3.1 (1.4)
40E	**38RBA4-40E**	5, 6	**38RBT4-40E**	7, 8	3.1 (1.4)
50E	**38RBA4-50E**	5, 6	**38RBT4-50E**	7, 8	3.1 (1.4)
65E	**38RBA4-65E**	5, 6	**38RBT4-65E**	7, 8	3.1 (1.4)
80E	**38RBA4-80E**	5, 6	**38RBT4-80E**	7, 8	3.1 (1.4)
100E	**38RBA4-100E**	5, 6	**38RBT4-100E**	7, 8	3.1 (1.4)
125E	**38RBA4-125E**	5, 6	**38RBT4-125E**	7, 8	3.1 (1.4)
150E	**38RBA4-150E**	5, 6	**38RBT4-150E**	7, 8	3.1 (1.4)
200E	**38RBA4-200E**	5, 6	**38RBT4-200E**	7, 8	3.1 (1.4)
250E	**38RBA4-250E**	5, 6	**38RBT4-250E**	10, 11	3.1 (1.4)
300E	**38RBA4-300E**	5, 6	**38RBT4-300E**	(0, 11	3.1 (1.4)

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 400A (For Use with 38RBA4 Fuseholders) ①

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–300E	Non-disconnect	**38RBA4-NH**	**38RBA4-INH**	34.5	38.0	150	**38RBA4-PNM**	—	**38RBA4-NL**	**RBA4-FLTR**	**38RBA4-SHNT**
										RBA4-COND	
	Non-disconnect	**38RBA4-NH**	**38RBA4-INH**	34.5	38.0	150	**38RBA4-PNM**	—	**38RBA4-NL**	**RBA4-FLTR**	**38RBA4-SHNT**
										RBA4-COND	
	Disconnect	**38RBA4-DH**	**38RBA2-IDH**	34.5	38.0	150	**38RBA4-PDM**	—	**38RBA4-DL**	**RBA4-FLTR**	**38RBA4-SHNT**
										RBA4-COND	
	Disconnect	**38RBA4-DH**	**38RBA2-IDH**	34.5	38.0	150	**38RBA4-PDM**	—	**38RBA4-DL**	**RBA4-FLTR**	**38RBA4-SHNT**
										RBA4-COND	
	Bolt-in	—	**38RBA4-INH-B**	34.5	38.0	150	**38RBA8-PNM**	**38RBA8-GNM**	**38RBA8-NL**	**RBA4-FLTR**	**38RBA4-SHNT**
										RBA4-COND	

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 400A ②

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
0.5–300E	Dropout	**38RDB4-DH**	34.5	38.0	150	**38RDB4-VM**	**38RDB4-UM**	**RDB4-VL**	**RDB4-UL**	**38RDB4-SHNT**
	Dropout	**38RDB4-DH**	34.5	38.0	200	**38RDB4-HVM**	**38RDB4-HUM**	**RDB4-VL**	**RDB4-UL**	**38RDB4-SHNT**

Notes

① For new installation, order one refill (Standard Speed or Time Lag), one fuseholder, one mounting, and one filter or condenser per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

② For new installation, order one refill (Standard Speed or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type 38RBA4 Expulsion Fuse Refill Units Used in 38RBA8/15RDB4 Fuseholders—38.0 kV Maximum (34.5 kV Nominal) 800A

RBA/RBT Refill Units

Ampere Rating	Standard Speed (Fuse Refills) Quantity	Standard Speed (Fuse Refills) Catalog Number	Standard Speed (Fuse Refills) Curve Reference 36-635	Time Lag (Fuse Refills) Quantity	Time Lag (Fuse Refills) Catalog Number	Time Lag (Fuse Refills) Curve Reference 36-635	Approximate Shipping Weight Lbs (kg)
450E	2	**38RBA4-250E**	9	2	**38RBT4-250E**	12	①
540E	2	**38RBA4-300E**	9	2	**38RBT4-300E**	12	①

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 800A (For Use with 38RBA8 Fuseholders) ②

RBA Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Indoor or Enclosure Applications)

Ampere Rating	Style	Fuseholder Non-Indicating Catalog Number	Fuseholder Indicating Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Porcelain Insulator Catalog Number	Mounting (Including Live Parts Less Holder) Glass Polyester Catalog Number	Live Parts Catalog Number	Fuse Filters and Condensers Catalog Number	Spring and Shunt Assy. Catalog Number
450E–540E	Non-disconnect	**38RBA8-NH**	**38RBA8-INH**	34.5	38.0	150	**38RBA8-PNM**	—	**38RBA8-NL**	**RBA4-FLTR** ③	**38RBA4-SHNT**
										RBA4-COND ③	
	Non-disconnect	**38RBA8-NH**	**38RBA8-INH**	34.5	38.0	150	**38RBA8-PNM**	—	**38RBA8-NL**	**RBA4-FLTR** ③	**38RBA4-SHNT**
										RBA4-COND ③	

Type RBA Expulsion Fuses for Use Indoors or in an Enclosure—38.0 kV Maximum (34.5 kV Nominal) 800A ④

RDB Fuseholders, Mountings and Hardware (For Use with RBA/RBT Refills/Holders for Outdoor Applications)

Ampere Rating	Style	Fuseholder Catalog Number	Voltage (kV) Nominal	Voltage (kV) Maximum	LIWL (BIL)	Mounting (Including Live Parts Less Holder) Vertical (180°) Mounting Catalog Number	Mounting (Including Live Parts Less Holder) Underhung (90°) Mounting Catalog Number	Live Parts Vertical Catalog Number	Live Parts Underhung Catalog Number	Spring and Shunt Assy. Catalog Number
450E–540E	Disconnect	**38RDB4-NH**	34.5	38.0	150	**38RDB8-VM**	**38RDB8-UM**	**RDB8-VL**	**RDB8-UL**	**38RDB4-SHNT**
	Disconnect	**38RDB4-NH**	34.5	38.0	200	**38RDB8-HVM**	**38RDB8-HUM**	**RDB8-VL**	**RDB8-UL**	**38RDB4-SHNT**

Notes

① Requires two fuse refills as shown. Price each refill individually. Example: To order refill units for a 720E, 38 kV fuse, order 2 pieces of an 8RBA4-400E.

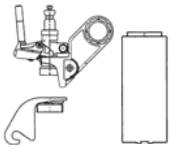
② For new installation, order two refills (Standard or Time Lag), one fuseholder, one mounting, and two filters or condensers per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

③ Two filters or condensers required.

④ For new installation, order two refills (Standard or Time Lag), one fuseholder and one mounting per phase. Live parts can be substituted for the mounting if the user is supplying base support and insulators.

Type DBU

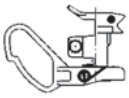
DBU-EFID



DBU17-GNM

DBU17-GDM

DBU-EFOD



Type DBU Expulsion Fuse Units 17.1 kV Maximum, 14.4 kV Nominal

Standard Speed			Slow Speed			K Speed		
Ampere Rating	Catalog Number ①②	Curve Reference 36-643	Ampere Rating	Catalog Number ①②	Curve Reference 36-643	Ampere Rating	Catalog Number ①②	Curve Reference 36-643
5E	**DBU17-5E**	11,14	—	—	—	3K	**DBU17-3K**	12, 15
7E	**DBU17-7E**	11,14	—	—	—	6K	**DBU17-6K**	12, 15
10E	**DBU17-10E**	11,14	—	—	—	8K	**DBU17-8K**	12, 15
13E	**DBU17-13E**	11,14	—	—	—	10K	**DBU17-10K**	12, 15
15E	**DBU17-15E**	11,14	15SE	**DBU17-15SE**	10, 13	12K	**DBU17-12K**	12, 15
20E	**DBU17-20E**	11,14	20SE	**DBU17-20SE**	10, 13	15K	**DBU17-15K**	12, 15
25E	**DBU17-25E**	11,14	25SE	**DBU17-25SE**	10, 13	20K	**DBU17-20K**	12, 15
30E	**DBU17-30E**	11,14	30SE	**DBU17-30SE**	10, 13	25K	**DBU17-25K**	12, 15
40E	**DBU17-40E**	11,14	40SE	**DBU17-40SE**	10, 13	30K	**DBU17-30K**	12, 15
50E	**DBU17-50E**	11,14	50SE	**DBU17-50SE**	10, 13	40K	**DBU17-40K**	12, 15
65E	**DBU17-65E**	11,14	65SE	**DBU17-65SE**	10, 13	50K	**DBU17-50K**	12, 15
80E	**DBU17-80E**	11,14	80SE	**DBU17-80SE**	10, 13	65K	**DBU17-65K**	12, 15
100E	**DBU17-100E**	11,14	100SE	**DBU17-100SE**	10, 13	80K	**DBU17-80K**	12, 15
125E	**DBU17-125E**	11,14	125SE	**DBU17-125SE**	10, 13	100K	**DBU17-100K**	12, 15
150E	**DBU17-150E**	11,14	150SE	**DBU17-150SE**	10, 13	140K	**DBU17-140K**	12, 15
175E	**DBU17-175E**	11,14	175SE	**DBU17-175SE**	10, 13	200K	**DBU17-200K**	12, 15
200E	**DBU17-200E**	11,14	200SE	**DBU17-200SE**	10, 13	—	—	—

Type DBU Expulsion Fuse Mountings 17.1 kV Maximum, 14.4 kV Nominal

Ampere Rating	Style	Style	Voltage (kV) Nominal	Maximum	LIWL (BIL)	Mounting	Live Parts	End Fittings	Muffler
5E–200E, 15SE–200SE, 3K–200K	Indoor	Non loadbreak	13.8	17.1	95	**DBU17-GNM** ③	**DBU17-NL** ③	**DBU-EFID** ④	**DBU-MFLR**
	Indoor	Loadbreak	13.8	17.1	95	**DBU17-GDM** ③	**DBU17-DL** ③	**DBU-EFID** ④	**DBU-MFLR**
	Outdoor	Dropout	13.8	17.1	125	**DBU-17-DM**	—	**DBU-EFOD**	—

Notes

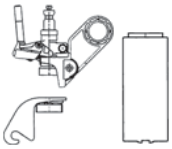
① Maximum interrupting rating 14 kA symmetrical.

② Approximate shipping weight 2.1 lb (0.95 kg).

③ To complete the mounting catalog number, specify -R for right side cale terminator or -L for left side cale terminator.

④ End fittings DBU-EFID include a muffler.

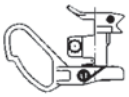
DBU-EFID



DBU17-GNM

DBU17-GDM

DBU-EFOD



Type DBU Expulsion Fuse Units 27.0 kV Maximum, 25 kV Nominal

Standard Speed			Slow Speed			K Speed		
Ampere Rating	Catalog Number ①②	Curve Reference 36-643	Ampere Rating	Catalog Number ①②	Curve Reference 36-643	Ampere Rating	Catalog Number ①②	Curve Reference 36-643
5E	**DBU27-5E**	11,17	—	**—**	—	3K	**DBU27-3K**	12, 18
7E	**DBU27-7E**	11,17	—	**—**	—	6K	**DBU27-6K**	12, 18
10E	**DBU27-10E**	11,17	—	**—**	—	8K	**DBU27-8K**	12, 18
13E	**DBU27-13E**	11,17	—	**—**	—	10K	**DBU27-10K**	12, 18
15E	**DBU27-15E**	11,17	15SE	**DBU27-15SE**	10, 16	12K	**DBU27-12K**	12, 18
20E	**DBU27-20E**	11,17	20SE	**DBU27-20SE**	10, 16	15K	**DBU27-15K**	12, 18
25E	**DBU27-25E**	11,17	25SE	**DBU27-25SE**	10, 16	20K	**DBU27-20K**	12, 18
30E	**DBU27-30E**	11,17	30SE	**DBU27-30SE**	10, 16	25K	**DBU27-25K**	12, 18
40E	**DBU27-40E**	11,17	40SE	**DBU27-40SE**	10, 16	30K	**DBU27-30K**	12, 18
50E	**DBU27-50E**	11,17	50SE	**DBU27-50SE**	10, 16	40K	**DBU27-40K**	12, 18
65E	**DBU27-65E**	11,17	65SE	**DBU27-65SE**	10, 16	50K	**DBU27-50K**	12, 18
80E	**DBU27-80E**	11,17	80SE	**DBU27-80SE**	10, 16	65K	**DBU27-65K**	12, 18
100E	**DBU27-100E**	11,17	100SE	**DBU27-100SE**	10, 16	80K	**DBU27-80K**	12, 18
125E	**DBU27-125E**	11,17	125SE	**DBU27-125SE**	10, 16	100K	**DBU27-100K**	12, 18
150E	**DBU27-150E**	11,17	150SE	**DBU27-150SE**	10, 16	140K	**DBU27-140K**	12, 18
175E	**DBU27-175E**	11,17	175SE	**DBU27-175SE**	10, 16	200K	**DBU27-200K**	12, 18
200E	**DBU27-200E**	11,17	200SE	**DBU27-200SE**	10, 16	—	**—**	—

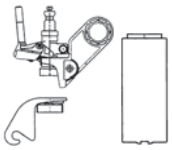
Type DBU Expulsion Fuse Mountings 27.0 kV Maximum, 25 kV Nominal

Ampere Rating	Style	Style	Voltage (kV) Nominal	Maximum	LIWL (BIL)	Mounting	Live Parts	End Fittings	Muffler
5E–200E, 15SE–200SE, 3K–200K	Indoor	Non loadbreak	23.5	27.0	110	**DBU27-GNM** ③	**DBU27-NL** ③	**DBU-EFID** ④	**DBU-MFLR**
	Indoor	Loadbreak	23.5	27.0	110	**DBU27-GDM** ③	**DBU27-DL** ③	**DBU-EFID** ④	**DBU-MFLR**
	Outdoor	Dropout	23.5	27.0	150	**DBU-27-DM**	—	**DBU-EFOD**	—

Notes

① Maximum interrupting rating 12.5 kA symmetrical.
② Approximate shipping weight 2.1 lb (0.95 kg).
③ To complete the mounting catalog number, specify -R for right side cale terminator or -L for left side cale terminator.
④ End fittings DBU-EFID include a muffler.

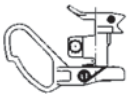
DBU-EFID



DBU17-GNM

DBU17-GDM

DBU-EFOD



Type DBU Expulsion Fuse Units 38.8 kV Maximum, 34.5 kV Nominal

Standard Speed			Slow Speed			K Speed		
Ampere Rating	Catalog Number ①②	Curve Reference 36-643	Ampere Rating	Catalog Number ②	Curve Reference 36-643	Ampere Rating	Catalog Number ①②	Curve Reference 36-643
5E	**DBU38-5E**	11,17	—	**—**	—	3K	**DBU38-3K**	12, 18
7E	**DBU38-7E**	11,17	—	**—**	—	6K	**DBU38-6K**	12, 18
10E	**DBU38-10E**	11,17	—	**—**	—	8K	**DBU38-8K**	12, 18
13E	**DBU38-13E**	11,17	—	**—**	—	10K	**DBU38-10K**	12, 18
15E	**DBU38-15E**	11,17	15SE	**DBU38-15SE**	10, 16	12K	**DBU38-12K**	12, 18
20E	**DBU38-20E**	11,17	20SE	**DBU38-20SE**	10, 16	15K	**DBU38-15K**	12, 18
25E	**DBU38-25E**	11,17	25SE	**DBU38-25SE**	10, 16	20K	**DBU38-20K**	12, 18
30E	**DBU38-30E**	11,17	30SE	**DBU38-30SE**	10, 16	25K	**DBU38-25K**	12, 18
40E	**DBU38-40E**	11,17	40SE	**DBU38-40SE**	10, 16	30K	**DBU38-30K**	12, 18
50E	**DBU38-50E**	11,17	50SE	**DBU38-50SE**	10, 16	40K	**DBU38-40K**	12, 18
65E	**DBU38-65E**	11,17	65SE	**DBU38-65SE**	10, 16	50K	**DBU38-50K**	12, 18
80E	**DBU38-80E**	11,17	80SE	**DBU38-80SE**	10, 16	65K	**DBU38-65K**	12, 18
100E	**DBU38-100E**	11,17	100SE	**DBU38-100SE**	10, 16	80K	**DBU38-80K**	12, 18
125E	**DBU38-125E**	11,17	125SE	**DBU38-125SE**	10, 16	100K	**DBU38-100K**	12, 18
150E	**DBU38-150E**	11,17	150SE	**DBU38-150SE**	10, 16	140K	**DBU38-140K**	12, 18
175E	**DBU38-175E**	11,17	175SE	**DBU38-175SE**	10, 16	200K	**DBU38-200K**	12, 18
200E	**DBU38-200E**	11,17	200SE	**DBU38-200SE**	10, 16	—	**—**	—

Type DBU Expulsion Fuse Mountings 38.0 kV Maximum, 34.5 kV Nominal

Ampere Rating	Style	Style	Voltage (kV) Nominal	Maximum	LIWL (BIL)	Mounting	Live Parts	End Fittings	Muffler
5E–200E, 15SE–200SE, 3K–200K	Indoor	Non loadbreak	34.5	38	150	**DBU38-GNM** ③	**DBU38-NL** ③	**DBU-EFID** ④	**DBU-MFLR**

Notes

① Maximum interrupting rating 10 kA symmetrical (outdoor dropout, 8.5 kA indoor with muffler.

② Approximate shipping weight 2.1 lb (0.95 kg).

③ To complete the mounting catalog number, specify -R for right side cale terminator or -L for left side cale terminator.

④ End fittings DBU-EFID includes a muffler.

Technical Data and Specifications

Type DBA

Type DBA Expulsion Fuses for Use Indoors or Outdoors

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
Type DBA-1 Fuse Refills 8.3 kV Maximum (7.2 kV Nominal)			
0.5	**8DBA1-.5**	10, 11	1.5 (0.7)
3	**8DBA1-3**	10, 11	1.5 (0.7)
5E	**8DBA1-5E**	10, 11	1.5 (0.7)
7E	**8DBA1-7E**	10, 11	1.5 (0.7)
10E	**8DBA1-10E**	10, 11	1.5 (0.7)
15E	**8DBA1-15E**	10, 11	1.5 (0.7)
20E	**8DBA1-20E**	10, 11	1.5 (0.7)
25E	**8DBA1-25E**	10, 11	1.5 (0.7)
30E	**8DBA1-30E**	10, 11	1.5 (0.7)
40E	**8DBA1-40E**	10, 11	1.5 (0.7)
50E	**8DBA1-50E**	10, 11	1.5 (0.7)
65E	**8DBA1-65E**	10, 11	1.5 (0.7)
80E	**8DBA1-80E**	10, 11	1.5 (0.7)
100E	**8DBA1-100E**	10, 11	1.5 (0.7)
125E	**8DBA1-125E**	10, 11	1.5 (0.7)
150E	**8DBA1-150E**	10, 11	1.5 (0.7)
200E	**8DBA1-200E**	10, 11	1.5 (0.7)
15.5 kV Maximum (14.4 kV Nominal)			
0.5	**15DBA1-.5**	10, 11	2.1 (0.95)
3	**15DBA1-3**	10, 11	2.1 (0.95)
5E	**15DBA1-5E**	10, 11	2.1 (0.95)
7E	**15DBA1-7E**	10, 11	2.1 (0.95)
10E	**15DBA1-10E**	10, 11	2.1 (0.95)
15E	**15DBA1-15E**	10, 11	2.1 (0.95)
20E	**15DBA1-20E**	10, 11	2.1 (0.95)
25E	**15DBA1-25E**	10, 11	2.1 (0.95)
30E	**15DBA1-30E**	10, 11	2.1 (0.95)
40E	**15DBA1-40E**	10, 11	2.1 (0.95)
50E	**15DBA1-50E**	10, 11	2.1 (0.95)
65E	**15DBA1-65E**	10, 11	2.1 (0.95)
80E	**15DBA1-80E**	10, 11	2.1 (0.95)
100E	**15DBA1-100E**	10, 11	2.1 (0.95)
125E	**15DBA1-125E**	10, 11	2.1 (0.95)
150E	**15DBA1-150E**	10, 11	2.1 (0.95)
200E	**15DBA1-200E**	10, 11	2.1 (0.95)

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
25 kV Maximum (23 kV Nominal)			
0.5	**25DBA1-.5**	10, 11	3.1 (1.4)
3	**25DBA1-3**	10, 11	3.1 (1.4)
5E	**25DBA1-5E**	10, 11	3.1 (1.4)
7E	**25DBA1-7E**	10, 11	3.1 (1.4)
10E	**25DBA1-10E**	10, 11	3.1 (1.4)
15E	**25DBA1-15E**	10, 11	3.1 (1.4)
20E	**25DBA1-20E**	10, 11	3.1 (1.4)
25E	**25DBA1-25E**	10, 11	3.1 (1.4)
30E	**25DBA1-30E**	10, 11	3.1 (1.4)
40E	**25DBA1-40E**	10, 11	3.1 (1.4)
50E	**25DBA1-50E**	10, 11	3.1 (1.4)
65E	**25DBA1-65E**	10, 11	3.1 (1.4)
80E	**25DBA1-80E**	10, 11	3.1 (1.4)
100E	**25DBA1-100E**	10, 11	3.1 (1.4)
125E	**25DBA1-125E**	10, 11	3.1 (1.4)
150E	**25DBA1-150E**	10, 11	3.1 (1.4)
200E	**25DBA1-200E**	10, 11	3.1 (1.4)

Type DBA Expulsion Fuses for Use Indoors or Outdoors, continued

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
Type DBA-1 Fuse Refills 38 kV Maximum (34.5 kV Nominal)			
0.5	**38DBA1-.5**	10, 12	4.2 (1.9)
3	**38DBA1-3**	10, 12	4.2 (1.9)
5E	**38DBA1-5E**	10, 12	4.2 (1.9)
7E	**38DBA1-7E**	10, 12	4.2 (1.9)
10E	**38DBA1-10E**	10, 12	4.2 (1.9)
15E	**38DBA1-15E**	10, 12	4.2 (1.9)
20E	**38DBA1-20E**	10, 12	4.2 (1.9)
25E	**38DBA1-25E**	10, 12	4.2 (1.9)
30E	**38DBA1-30E**	10, 12	4.2 (1.9)
40E	**38DBA1-40E**	10, 12	4.2 (1.9)
50E	**38DBA1-50E**	10, 12	4.2 (1.9)
65E	**38DBA1-65E**	10, 12	4.2 (1.9)
80E	**38DBA1-80E**	10, 12	4.2 (1.9)
100E	**38DBA1-100E**	10, 12	4.2 (1.9)
125E	**38DBA1-125E**	10, 12	4.2 (1.9)
150E	**38DBA1-150E**	10, 12	4.2 (1.9)
200E	**38DBA1-200E**	10, 12	4.2 (1.9)
48 kV Maximum (46 kV Nominal)			
0.5	**48DBA1-.5**	10, 12	6.5 (3.0)
3	**48DBA1-3**	10, 12	6.5 (3.0)
5E	**48DBA1-5E**	10, 12	6.5 (3.0)
7E	**48DBA1-7E**	10, 12	6.5 (3.0)
10E	**48DBA1-10E**	10, 12	6.5 (3.0)
15E	**48DBA1-15E**	10, 12	6.5 (3.0)
20E	**48DBA1-20E**	10, 12	6.5 (3.0)
25E	**48DBA1-25E**	10, 12	6.5 (3.0)
30E	**48DBA1-30E**	10, 12	6.5 (3.0)
40E	**48DBA1-40E**	10, 12	6.5 (3.0)
50E	**48DBA1-50E**	10, 12	6.5 (3.0)
65E	**48DBA1-65E**	10, 12	6.5 (3.0)
80E	**48DBA1-80E**	10, 12	6.5 (3.0)
100E	**48DBA1-100E**	10, 12	6.5 (3.0)
125E	**48DBA1-125E**	10, 12	6.5 (3.0)
150E	**48DBA1-150E**	10, 12	6.5 (3.0)
200E	**48DBA1-200E**	10, 12	6.5 (3.0)

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
72 kV Maximum (69 kV Nominal)			
0.5	**72DBA1-.5**	10, 12	7.1 (3.2)
3	**72DBA1-3**	10, 12	7.1 (3.2)
5E	**72DBA1-5E**	10, 12	7.1 (3.2)
7E	**72DBA1-7E**	10, 12	7.1 (3.2)
10E	**72DBA1-10E**	10, 12	7.1 (3.2)
15E	**72DBA1-15E**	10, 12	7.1 (3.2)
20E	**72DBA1-20E**	10, 12	7.1 (3.2)
25E	**72DBA1-25E**	10, 12	7.1 (3.2)
30E	**72DBA1-30E**	10, 12	7.1 (3.2)
40E	**72DBA1-40E**	10, 12	7.1 (3.2)
50E	**72DBA1-50E**	10, 12	7.1 (3.2)
65E	**72DBA1-65E**	10, 12	7.1 (3.2)
80E	**72DBA1-80E**	10, 12	7.1 (3.2)
100E	**72DBA1-100E**	10, 12	7.1 (3.2)
125E	**72DBA1-125E**	10, 12	7.1 (3.2)
150E	**72DBA1-150E**	10, 12	7.1 (3.2)
200E	**72DBA1-200E**	10, 12	7.1 (3.2)

Type DBA Expulsion Fuses for Use Indoors or Outdoors, continued

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
Type DBA-2 Fuse Refills 38 kV Maximum (34.5 kV Nominal)			
0.5	**38DBA2-.5**	10, 12	10 (4.5)
3	**38DBA2-3**	10, 12	10 (4.5)
5E	**38DBA2-5E**	10, 12	10 (4.5)
7E	**38DBA2-7E**	10, 12	10 (4.5)
10E	**38DBA2-10E**	10, 12	10 (4.5)
15E	**38DBA2-15E**	10, 12	10 (4.5)
20E	**38DBA2-20E**	10, 12	10 (4.5)
25E	**38DBA2-25E**	10, 12	10 (4.5)
30E	**38DBA2-30E**	10, 12	10 (4.5)
40E	**38DBA2-40E**	10, 12	10 (4.5)
50E	**38DBA2-50E**	10, 12	10 (4.5)
65E	**38DBA2-65E**	10, 12	10 (4.5)
80E	**38DBA2-80E**	10, 12	10 (4.5)
100E	**38DBA2-100E**	10, 12	10 (4.5)
125E	**38DBA2-125E**	10, 12	10 (4.5)
150E	**38DBA2-150E**	10, 12	10 (4.5)
200E	**38DBA2-200E**	10, 12	10 (4.5)
48 kV Maximum (46 kV Nominal)			
0.5	**48DBA2-.5**	10, 12	12 (5.4)
3	**48DBA2-3**	10, 12	12 (5.4)
5E	**48DBA2-5E**	10, 12	12 (5.4)
7E	**48DBA2-7E**	10, 12	12 (5.4)
10E	**48DBA2-10E**	10, 12	12 (5.4)
15E	**48DBA2-15E**	10, 12	12 (5.4)
20E	**48DBA2-20E**	10, 12	12 (5.4)
25E	**48DBA2-25E**	10, 12	12 (5.4)
30E	**48DBA2-30E**	10, 12	12 (5.4)
40E	**48DBA2-40E**	10, 12	12 (5.4)
50E	**48DBA2-50E**	10, 12	12 (5.4)
65E	**48DBA2-65E**	10, 12	12 (5.4)
80E	**48DBA2-80E**	10, 12	12 (5.4)
100E	**48DBA2-100E**	10, 12	12 (5.4)
125E	**48DBA2-125E**	10, 12	12 (5.4)
150E	**48DBA2-150E**	10, 12	12 (5.4)
200E	**48DBA2-200E**	10, 12	12 (5.4)

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
72 kV Maximum (69 kV Nominal)			
0.5	**72DBA2-.5**	10, 12	15 (6.8)
3	**72DBA2-3**	10, 12	15 (6.8)
5E	**72DBA2-5E**	10, 12	15 (6.8)
7E	**72DBA2-7E**	10, 12	15 (6.8)
10E	**72DBA2-10E**	10, 12	15 (6.8)
15E	**72DBA2-15E**	10, 12	15 (6.8)
20E	**72DBA2-20E**	10, 12	15 (6.8)
25E	**72DBA2-25E**	10, 12	15 (6.8)
30E	**72DBA2-30E**	10, 12	15 (6.8)
40E	**72DBA2-40E**	10, 12	15 (6.8)
50E	**72DBA2-50E**	10, 12	15 (6.8)
65E	**72DBA2-65E**	10, 12	15 (6.8)
80E	**72DBA2-80E**	10, 12	15 (6.8)
100E	**72DBA2-100E**	10, 12	15 (6.8)
125E	**72DBA2-125E**	10, 12	15 (6.8)
150E	**72DBA2-150E**	10, 12	15 (6.8)
200E	**72DBA2-200E**	10, 12	15 (6.8)

Type DBA Expulsion Fuses for Use Indoors or Outdoors, continued

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
Type DBA-2 Fuse Refills 92 kV Maximum (92 kV Nominal)			
3	**92DBA2-3**	10, 13	19 (8.6)
5E	**92DBA2-5E**	10, 13	19 (8.6)
7E	**92DBA2-7E**	10, 13	19 (8.6)
10E	**92DBA2-10E**	10, 13	19 (8.6)
15E	**92DBA2-15E**	10, 13	19 (8.6)
20E	**92DBA2-20E**	10, 13	19 (8.6)
25E	**92DBA2-25E**	10, 13	19 (8.6)
30E	**92DBA2-30E**	10, 13	19 (8.6)
40E	**92DBA2-40E**	10, 13	19 (8.6)
50E	**92DBA2-50E**	10, 13	19 (8.6)
65E	**92DBA2-65E**	10, 13	19 (8.6)
80E	**92DBA2-80E**	10, 13	19 (8.6)
100E	**92DBA2-100E**	10, 13	19 (8.6)
125E	**92DBA2-125E**	10, 13	19 (8.6)
150E	**92DBA2-150E**	10, 13	19 (8.6)
200E	**92DBA2-200E**	10, 13	19 (8.6)
121 kV Maximum (115 kV Nominal)			
3	**121DBA2-3**	10, 13	22 (10)
5E	**121DBA2-5E**	10, 13	22 (10)
7E	**121DBA2-7E**	10, 13	22 (10)
10E	**121DBA2-10E**	10, 13	22 (10)
15E	**121DBA2-15E**	10, 13	22 (10)
20E	**121DBA2-20E**	10, 13	22 (10)
25E	**121DBA2-25E**	10, 13	22 (10)
30E	**121DBA2-30E**	10, 13	22 (10)
40E	**121DBA2-40E**	10, 13	22 (10)
50E	**121DBA2-50E**	10, 13	22 (10)
65E	**121DBA2-65E**	10, 13	22 (10)
80E	**121DBA2-80E**	10, 13	22 (10)
100E	**121DBA2-100E**	10, 13	22 (10)
125E	**121DBA2-125E**	10, 13	22 (10)
150E	**121DBA2-150E**	10, 13	22 (10)
200E	**121DBA2-200E**	10, 13	22 (10)

Ampere Rating	DBA-1 Fuse Units Catalog Number	Curve Reference 36-623	Approximate Shipping Weight Lbs (kg)
145 kV Maximum (138 kV Nominal)			
3	**145DBA2-3**	10, 13	25 (11.4)
5E	**145DBA2-5E**	10, 13	25 (11.4)
7E	**145DBA2-7E**	10, 13	25 (11.4)
10E	**145DBA2-10E**	10, 13	25 (11.4)
15E	**145DBA2-15E**	10, 13	25 (11.4)
20E	**145DBA2-20E**	10, 13	25 (11.4)
25E	**145DBA2-25E**	10, 13	25 (11.4)
30E	**145DBA2-30E**	10, 13	25 (11.4)
40E	**145DBA2-40E**	10, 13	25 (11.4)
50E	**145DBA2-50E**	10, 13	25 (11.4)
65E	**145DBA2-65E**	10, 13	25 (11.4)
80E	**145DBA2-80E**	10, 13	25 (11.4)
100E	**145DBA2-100E**	10, 13	25 (11.4)
125E	**145DBA2-125E**	10, 13	25 (11.4)
150E	**145DBA2-150E**	10, 13	25 (11.4)
200E	**145DBA2-200E**	10, 13	25 (11.4)

Contents

Description	*Page*
Product Selection	**V4-T3-101**
Type CLE	**V4-T3-101**
Type HLE	**V4-T3-105**
Type BHLE	**V4-T3-108**
Type HCL	**V4-T3-111**
Type CLS	**V4-T3-113**
Type CLPT	**V4-T3-119**
Type CX	**V4-T3-124**
Type CXN	**V4-T3-128**
Type CXF	**V4-T3-130**
Type DSL	**V4-T3-131**

Catalog Number Selection

Easy to Use, Easy to Order!

Eaton's fuse catalog numbering system makes it easy to order the right fuse. The catalog numbers are easy to remember, unique to each fuse, and are broken down in three descriptive segments: Fuse type, voltage rating and current rating.

These catalog numbers can be entered directly and easily:

- No change in order processing will occur if you use either a style number or its corresponding catalog number. You will get the same fuse

Examples:

5CLE-30E—5.5 max. kV, CLE fuse unit, 30E amperes

15CXN-45C—15.5 max. kV, CXN fuse unit, 45C amperes

5CLS-GDM-E—5.5 max. kV, CLS fuse unit, glass polyester nondisconnect mounting

CLE-DL-D—CLE, disconnect live parts Size D

Current Limiting Fuses

15 CLE – 100 E – D

Maximum kV	
2	= 2.4, 2.5, 2.75
4	= 4.3, 4.8
5	= 5.08, 5.5
7	= 7.2
8	= 8.3
15	= 15.5
25	= 25.5
38	= 38.0

Type	
CLE	**CLS75**
HLE	**CX**
BHLE	**CXN**
CLPT	**AHLE**
NCLPT	**ACLS**
CLS	**CXI**
BCLS	**NCLS**
CLS70	

Ampere Rating
0.5 to **1350**

Class
E
R
C
X

Size
A
B
D

Current Limiting Fuse Accessories

15 CLE – P NM – C

Maximum kV
2 = 2.4, 2.5, 2.75
4 = 4.3, 4.8
5 = 5.08, 5.5
7 = 7.2
8 = 8.3
15 = 15.5
25 = 25.5
38 = 38.0

Type	
CLE	**CLS**
HLE	**CLS75**
CLPT	**CX**
NCLPT	**CXN**

Insulator
G = Glass polyester
P = Porcelain
H = High BIL

Hardware
DM = Disconnect mounting
NM = Nondisconnect mounting
DL = Disconnect live parts
NL = Nondisconnect live parts
DF = Disconnect end fittings

Diameter Size
A = 1-5/8 inches (41.3 mm) 0.53E–1.5E single barrel
B = 1-5/8 inches (41.3 mm) 3E–10E single barrel
C = 2-inch (50.8 mm) single barrel
D = 3-inch (76.2 mm) single barrel
E = 3-inch (76.2 mm) double barrel
F = 4-inch (101.6 mm) double barrel
G = 5/8-inch (15.9 mm) ferrule (CX/CXN only)

Product Selection

Type CLE

Type CLE Current Limiting Fuses 2.75 kV Maximum (2.4 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Heritage Product	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Performance Curves Peak Let-Through Current	Catalog Number
15E	1	50	H	Indoor	56353202	56353302	63931702	**2CLE-15E**
20E	1	50	H	Indoor	56353202	56353302	63931702	**2CLE-20E**
25E	1	50	H	Indoor	56353202	56353302	63931702	**2CLE-25E**
10E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-10E**
30E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-30E**
40E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-40E**
50E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-50E**
65E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-65E**
80E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-80E**
100E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-100E**
125E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-125E**
150E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-150E**
200E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-200E**
225E	1	50	H	Indoor	53686104	53686204	63931704	**2CLE-225E**
250E	2	50	H	Indoor	53690002	53690102	63931802	**2CLE-250E**
300E	2	50	H	Indoor	53690002	53690102	63931802	**2CLE-300E**
350X	2	50	H	Indoor	53690002	53690102	63931802	**2CLE-350X**
400X	2	50	H	Indoor	53690002	53690102	63931802	**2CLE-400X**
450X	2	50	H	Indoor	53690002	53690102	63931802	**2CLE-450X**

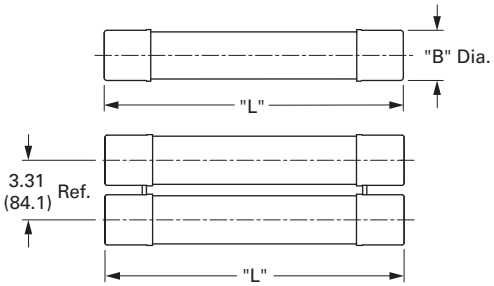
Type CLE Mountings and Hardware 2.75 kV Maximum (2.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
15E–25E	Non-disconnect	60	2.00 (50.8)	8.13 (206.5)	9.50 (241.3)	2 (0.91)	**2CLE-PNM-C**	**2CLE-GNM-C**	**CLE-NL-C**	—
	Disconnect	60					**2CLE-PDM-C**	**2CLE-GDM-C**	**CLE-DL-C**	**CLE-DF-C**
10E–250E	Non-disconnect	60	3.00 (76.2)	7.00 (177.8)	10.90 (276.9)	7 (3.18)	**2CLE-PNM-D**	**2CLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	60					**2CLE-PDM-D**	**2CLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
300E–450E	Non-disconnect	60	3.00 (76.2)	7.00 (177.8)	10.90 (276.9)	15 (6.81)	**2CLE-PNM-E**	**2CLE-GNM-E**	**CLE-NL-E**	—
	Disconnect	60					**2CLE-PDM-E**	**2CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type CLE Fuse



CLE kV	"L"	"B" Dia.
15E–25E	9.50 (241.3)	2.00 (50.8)
10E–450E	10.90 (276.9)	3.00 (76.2)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type CLE Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Heritage Product	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Peak Let-Through Current	Catalog Number
15E	1	50	H	Indoor	56353204	56353304	63931702	**5CLE-15E**
20E	1	50	H	Indoor	56353204	56353304	63931702	**5CLE-20E**
25E	1	50	H	Indoor	56353204	56353304	63931702	**5CLE-25E**
10E	1	63	—	Indoor/outdoor	70548501	70548601	70548701	**5CLE-10E-D**
15E	1	63	—	Indoor/outdoor	70548501	70548601	70548701	**5CLE-15E-D**
20E	1	63	—	Indoor/outdoor	70548501	70548601	70548701	**5CLE-20E-D**
25E	1	63	—	Indoor/outdoor	70548501	70548601	70548701	**5CLE-25E-D**
30E	1	63	—	Indoor/outdoor	70548501	70548601	70548701	**5CLE-30E**
40E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-40E**
50E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-50E**
65E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-65E**
80E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-80E**
100E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-100E**
125E	1	50	—	Indoor/outdoor	70545801	70545901	70546701	**5CLE-125E**
150E	1	63	—	Indoor/outdoor	70545801	70545901	70547601	**5CLE-150E**
175E	1	63	—	Indoor/outdoor	70545801	70545901	70547601	**5CLE-175E**
200E	1	63	—	Indoor/outdoor	70545801	70545901	70547601	**5CLE-200E**
250E	1	63	—	Indoor/outdoor	70545801	70545901	70547601	**5CLE-250E**
300E	2	63	—	Indoor/outdoor	70546001	70546101	70547601	**5CLE-300E**
350E	2	63	—	Indoor/outdoor	70546001	70546101	70547601	**5CLE-350E**
400E	2	63	—	Indoor/outdoor	70546001	70546101	70547601	**5CLE-400E**
450E	2	63	—	Indoor/outdoor	70546001	70546101	70547601	**5CLE-450E**
600E	2	40	—	Indoor	62908902	62908903	62908904	**5CLE-600E**
750E	2	40	—	Indoor	62908902	62908903	62908904	**5CLE-750E**
1100E	4	31	—	Indoor	62908902	62908903	62908904	**5CLE-1100E**
1350E	4	31	—	Indoor	62908902	62908903	62908904	**5CLE-1350E**

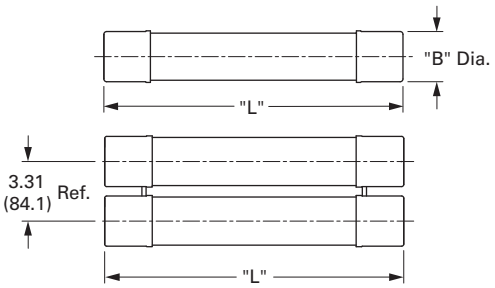
Type CLE Mountings and Hardware 5.5 kV Maximum (4.8 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
10E-D–25E-D 30E–250E	Non-disconnect	60	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	9 (4.09)	**5CLE-PNM-D**	**5CLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	60					**5CLE-PDM-D**	**5CLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
15E–25E	Non-disconnect	60	2.00 (50.8)	11.50 (292.1)	12.90 (327.7)	3 (1.36)	**5CLE-PNM-C**	**5CLE-GNM-C**	**CLE-NL-C**	—
	Disconnect	60					**5CLE-PDM-C**	**5CLE-GDM-C**	**CLE-DL-C**	**CLE-DF-C**
300E–450E	Non-disconnect	60	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	19 (8.63)	**5CLE-PNM-E**	**5CLE-GNM-E**	**CLE-NL-E**	—
	Disconnect	60					**5CLE-PDM-E**	**5CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**
600E and 750E	Consult factory	60	4.00 (101.6)	N/A	N/A	40 (18.16)	—	—	—	—
1100E and 1350E	Consult factory	—	4.00 (101.6)	N/A	N/A	80 (36.32)	—	—	—	—

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type CLE Fuse



CLE kV	"L"	"B" Dia.
15E–25E	12.90 (327.7)	2.00 (50.8)
10E–450E	17.90 (454.7)	3.00 (76.2)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type CLE Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Heritage Product	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Performance Curves Peak Let-Through Current	Catalog Number
15E	1	50	H	Indoor	56353204	56353304	63931703	**8CLE-15E**
20E	1	50	H	Indoor	56353204	56353304	63931703	**8CLE-20E**
25E	1	50	H	Indoor	56353204	56353304	63931703	**8CLE-25E**
10E	1	50	—	Indoor/outdoor	70548501	70548601	70548801	**8CLE-10E-D**
15E	1	50	—	Indoor/outdoor	70548501	70548601	70548801	**8CLE-15E-D**
20E	1	50	—	Indoor/outdoor	70548501	70548601	70548801	**8CLE-20E-D**
25E	1	50	—	Indoor/outdoor	70548501	70548601	70548801	**8CLE-25E-D**
30E	1	50	—	Indoor/outdoor	70548501	70548601	70548801	**8CLE-30E**
40E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-40E**
50E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-50E**
65E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-65E**
80E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-80E**
100E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-100E**
125E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-125E**
150E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-150E**
175E	1	50	—	Indoor/outdoor	70546201	70546301	70547301	**8CLE-175E**
200E	2	50	—	Indoor/outdoor	70546401	70546501	70547301	**8CLE-200E**
250E	2	50	—	Indoor/outdoor	70546401	70546501	70547301	**8CLE-250E**
300E	2	50	—	Indoor/outdoor	70546401	70546501	70547301	**8CLE-300E**
350E	2	50	—	Indoor/outdoor	70546401	70546501	70547301	**8CLE-350E**

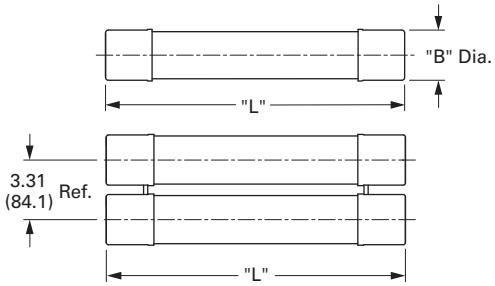
Type CLE Mountings and Hardware 8.3 kV Maximum (7.2 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
15E–25E	Non-disconnect	75	2.00 (50.8)	14.00 (355.6)	15.50 (393.7)	3 (1.36)	**8CLE-PNM-C**	**8CLE-GNM-C**	**CLE-NL-C**	—
	Disconnect	75					**8CLE-PDM-C**	**8CLE-GDM-C**	**CLE-DL-C**	**CLE-DF-C**
10E-D–25E-D 30E–175E	Non-disconnect	75	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	9 (4.09)	**8CLE-PNM-D**	**8CLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	75					**8CLE-PDM-D**	**8CLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
200E–350E	Non-disconnect	75	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	19 (8.63)	**8CLE-PNM-E**	**8CLE-GNM-E**	**CLE-NL-E**	—
	Disconnect	75					**8CLE-PDM-E**	**8CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type CLE Fuse



CLE kV	"L"	"B" Dia.
15E–25E	15.50 (393.7)	2.00 (50.8)
10E–350E	17.90 (454.7)	3.00 (76.2)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type CLE Current Limiting Fuses 15.5 kV Maximum (4.8 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Heritage Product	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Peak Let-Through Current	Catalog Number
15E	1	31.5	H	Indoor	56353204	56353304	63931703	**15CLE-15E**
20E	1	31.5	H	Indoor	56353204	56353304	63931703	**15CLE-20E**
25E	1	31.5	H	Indoor	56353204	56353304	63931703	**15CLE-25E**
10E	1	63	—	Indoor/outdoor	70548501	70548601	70548802	**15CLE-10E-D**
15E	1	63	—	Indoor/outdoor	70548501	70548601	70548802	**15CLE-15E-D**
20E	1	63	—	Indoor/outdoor	70548501	70548601	70548802	**15CLE-20E-D**
25E	1	63	—	Indoor/outdoor	70548501	70548601	70548802	**15CLE-25E-D**
30E	1	63	—	Indoor/outdoor	70548501	70548601	70548802	**15CLE-30E**
40E	1	63	—	Indoor/outdoor	70546801	70546901	70547501	**15CLE-40E**
50E	1	63	—	Indoor/outdoor	70546801	70546901	70547501	**15CLE-50E**
65E	1	63	—	Indoor/outdoor	70546801	70546901	70547501	**15CLE-65E**
80E	1	63	②	Indoor/outdoor	70546801	70546901	70547501	**15CLE-80E**
100E	1	63	②	Indoor/outdoor	70546801	70546901	70547501	**15CLE-100E**
125E	1	63	②	Indoor/outdoor	70546801	70546901	70547501	**15CLE-125E**
150E	1	63	②	Indoor/outdoor	70546801	70546901	70547501	**15CLE-150E**
175E	2	63	②	Indoor/outdoor	70547001	70547101	70547501	**15CLE-175E**
200E	2	63	②	Indoor/outdoor	70547001	70547101	70547501	**15CLE-200E**
250E	2	63	②	Indoor/outdoor	70547001	70547101	70547501	**15CLE-250E**
300E	2	63	②	Indoor/outdoor	70547001	70547101	70547501	**15CLE-300E**
80E	2	85	H ②	Indoor	59878302	59878402	63931604	**15CLE2-80E**
100E	2	85	H ②	Indoor	59878302	59878402	63931604	**15CLE2-100E**
125X	2	85	H ②	Indoor	59878302	59878402	63931604	**15CLE2-125X**
150E	3	50	H ②	Indoor	59878302	59878402	63931604	**15CLE3-150E**
175E/200X	3	50	H ②	Indoor	59878302	59878402	63931604	**15CLE3-175E/200X**

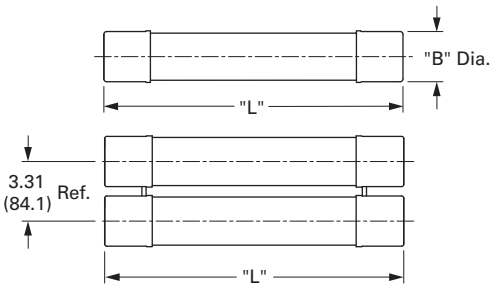
Type CLE Mountings and Hardware 15.5 kV Maximum (4.8 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
15E–25E	Non-disconnect	95	2.00 (50.8)	20.00 (508.0)	21.50 (546.1)	4.5 (2.04)	**15CLE-PNM-C**	**15CLE-GNM-C**	**CLE-NL-D**	—
		110					**15CLE-HPNM-C**	—	—	—
	Disconnect	95					**15CLE-PDM-C**	**15CLE-GDM-C**	**CLE-DL-C**	**CLE-DF-C**
		110					**15CLE-HPDM-C**	—	—	—
10E-D–25E-D 30E–150E	Non-disconnect	95	3.00 (76.2)	20.00 (508.0)	23.90 (607.1)	11 (4.99)	**15CLE-PNM-D**	**15CLE-GNM-D**	**CLE-NL-D**	—
		110					**15CLE-HPM-D**	—	—	—
	Disconnect	95					**15CLE-PDM-D**	**15CLE-GNM-D**	**CLE-DL-D**	**CLE-DF-D**
		110					**15CLE-HPDM-D**	—	—	—
175E–300E	Non-disconnect	110	3.00 (76.2)	20.00 (508.0)	23.90 (607.1)	23 (10.44)	**15CLE-PNM-E**	—	**CLE-DL-E**	**CLE-DF-E**
	Disconnect	110					**15CLE-PDM-E**	—	—	—

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type CLE Fuse



CLE kV	"L"	"B" Dia.
15E–25E	21.50 (546.1)	2.00 (50.8)
10E–300E	23.90 (607.1)	3.00 (76.2)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② For mountings, consult factory.

③ End fittings supplied only when required.

Type HLE

Type HLE Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal) Interrupting Rating 63 (kA rms Sym.)

Current Rating (Amperes)	Barrel Number	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number	Bolt-In Ferrule Catalog Number	AMPGARD Catalog Number
10E	1	Indoor/outdoor	70548507	70548607	70548703	**5HLE-10E**	**5BHLE-10E**	**5AHLE-10E**
15E	1	Indoor/outdoor	70548507	70548607	70548703	**5HLE-15E**	**5BHLE-15E**	**5AHLE-15E**
20E	1	Indoor/outdoor	70548507	70548607	70548703	**5HLE-20E**	**5BHLE-20E**	**5AHLE-20E**
25E	1	Indoor/outdoor	70548507	70548607	70548703	**5HLE-25E**	**5BHLE-25E**	**5AHLE-25E**
30E	1	Indoor/outdoor	70548507	70548607	70548703	**5HLE-30E**	**5BHLE-30E**	**5AHLE-30E**
40E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-40E**	**5BHLE-40E**	**5AHLE-40E**
50E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-50E**	**5BHLE-50E**	**5AHLE-50E**
65E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-65E**	**5BHLE-65E**	**5AHLE-65E**
80E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-80E**	**5BHLE-80E**	**5AHLE-80E**
100E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-100E**	**5BHLE-100E**	**5AHLE-100E**
125E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-125E**	**5BHLE-125E**	**5AHLE-125E**
150E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-150E**	**5BHLE-150E**	**5AHLE-150E**
175E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-175E**	**5BHLE-175E**	**5AHLE-175E**
200E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-200E**	**5BHLE-200E**	**5AHLE-200E**
250E	1	Indoor/outdoor	70545805	70545905	70547603	**5HLE-250E**	**5BHLE-250E**	**5AHLE-250E**
300E	2	Indoor/outdoor	70546005	70546105	70547603	**5HLE-300E**	**5BHLE-300E**	**5AHLE-300E**
350E	2	Indoor/outdoor	70546005	70546105	70547603	**5HLE-350E**	**5BHLE-350E**	**5AHLE-350E**
400E	2	Indoor/outdoor	70546005	70546105	70547603	**5HLE-400E**	**5BHLE-400E**	**5AHLE-400E**
450E	2	Indoor/outdoor	70546005	70546105	70547603	**5HLE-450E**	**5BHLE-450E**	**5AHLE-450E**

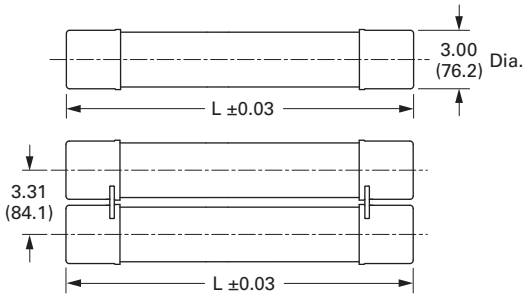
Type HLE Mountings and Hardware 5.5 kV Maximum (4.8 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
10E–250E	Non-disconnect	60	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	**5HLE-PNM-D**	**5HLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	60					**5HLE-PDM-D**	**5HLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
300E–450E	Non-disconnect	60	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	17 (7.72)	**5HLE-PNM-E**	**5HLE-GNM-E**	**CLE-NL-E**	—
	Disconnect	60					**5HLE-PDM-E**	**5HLE-GDM-E**	**CLE-DL-E**	**CLE-DF-D**

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type HLE Fuse



HLE kV	L ± 0.03
5.5	15.88 (403.4)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type HLE Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal) Interrupting Rating 50 (kA Sym.)

Current Rating (Amperes)	Barrel Number	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Peak Let-Through Current	Catalog Number	Bolt-In Ferrule Catalog Number	AMPGARD Catalog Number
10E	1	Indoor/outdoor	70548507	70548607	70548804	**8HLE-10E**	**8BHLE-10E**	**8AHLE-10E**
15E	1	Indoor/outdoor	70548507	70548607	70548804	**8HLE-15E**	**8BHLE-15E**	**8AHLE-15E**
20E	1	Indoor/outdoor	70548507	70548607	70548804	**8HLE-20E**	**8BHLE-20E**	**8AHLE-20E**
25E	1	Indoor/outdoor	70548507	70548607	70548804	**8HLE-25E**	**8BHLE-25E**	**8AHLE-25E**
30E	1	Indoor/outdoor	70548507	70548607	70548804	**8HLE-30E**	**8BHLE-30E**	**8AHLE-30E**
40E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-40E**	**8BHLE-40E**	**8AHLE-40E**
50E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-50E**	**8BHLE-50E**	**8AHLE-50E**
65E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-65E**	**8BHLE-65E**	**8AHLE-65E**
80E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-80E**	**8BHLE-80E**	**8AHLE-80E**
100E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-100E**	**8BHLE-100E**	**8AHLE-100E**
125E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-125E**	**8BHLE-125E**	**8AHLE-125E**
150E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-150E**	**8BHLE-150E**	**8AHLE-150E**
175E	1	Indoor/outdoor	70546203	70546303	70547201	**8HLE-175E**	**8BHLE-175E**	**8AHLE-175E**
200E	2	Indoor/outdoor	70546403	70546503	70547201	**8HLE-200E**	**8BHLE-200E**	**8AHLE-200E**
250E	2	Indoor/outdoor	70546403	70546503	70547201	**8HLE-250E**	**8BHLE-250E**	**8AHLE-250E**
300E	2	Indoor/outdoor	70546403	70546503	70547201	**8HLE-300E**	**8BHLE-300E**	**8AHLE-300E**
350E	2	Indoor/outdoor	70546403	70546503	70547201	**8HLE-350E**	**8BHLE-350E**	**8AHLE-350E**

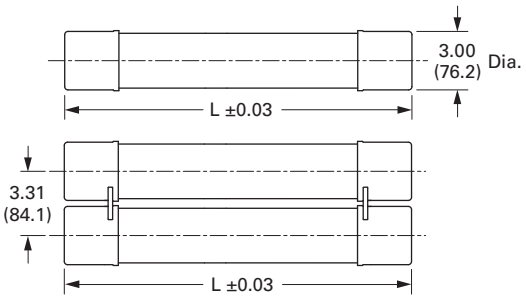
Type HLE Mountings and Hardware 8.3 kV Maximum (7.2 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
10E–175E	Non-disconnect	75	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	**8HLE-PNM-D**	**8HLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	75					**8HLE-PDM-D**	**8HLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
200E–350E	Non-disconnect	75					**8HLE-PNM-E**	**8HLE-GNM-E**	**CLE-NL-E**	—
	Disconnect	75					**8HLE-PDM-E**	**8HLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type HLE Fuse



HLE kV	L ± 0.03
8.3	15.88 (403.4)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type HLE Current Limiting Fuses 15.5 kV Maximum (14.4 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Indoor/ Outdoor	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Performance Curves Peak Let-Through Current	Catalog Number	Bolt-In Ferrule Catalog Number
10E	1	63	Indoor/outdoor	70548507	70548607	70548805	**15HLE-10E**	**15BHLE-10E**
15E	1	63	Indoor/outdoor	70548507	70548607	70548805	**15HLE-15E**	**15BHLE-15E**
20E	1	63	Indoor/outdoor	70548507	70548607	70548805	**15HLE-20E**	**15BHLE-20E**
25E	1	63	Indoor/outdoor	70548507	70548607	70548805	**15HLE-25E**	**15BHLE-25E**
30E	1	63	Indoor/outdoor	70548507	70548607	70548805	**15HLE-30E**	**15BHLE-30E**
40E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-40E**	**15BHLE-40E**
50E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-50E**	**15BHLE-50E**
65E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-65E**	**15BHLE-65E**
80E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-80E**	**15BHLE-80E**
100E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-100E**	**15BHLE-100E**
125E	1	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-125E**	**15BHLE-125E**
150E	2	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-150E**	**15BHLE-150E**
175E	2	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-175E**	**15BHLE-175E**
200E	2	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-200E**	**15BHLE-200E**
250E	2	63	Indoor/outdoor	70546601	70546701	70547401	**15HLE-250E**	**15BHLE-250E**

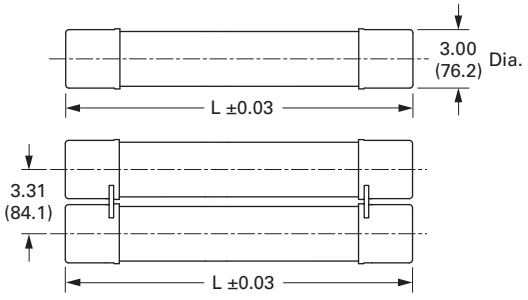
Type HLE Mountings and Hardware 15.5 kV Maximum (14.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
10E–175E	Non-disconnect	95	3.00 (76.2)	15.00 (381.0)	18.90 (480.1)	10 (4.54)	**15HLE-PNM-D**	**15HLE-GNM-D**	**CLE-NL-D**	—
	Disconnect	95					**15HLE-PDM-D**	**15HLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
150E–250E	Non-disconnect	95	3.00 (76.2)	15.00 (381.0)	18.90 (480.1)	21 (9.53)	**15HLE-PNM-E**	—	**CLE-NL-E**	—
	Disconnect	95					**15HLE-PDM-E**	—	**CLE-DL-E**	**CLE-DF-E**

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

Type HLE Fuse



HLE kV	L ± 0.03
15.5	18.88 (479.6)

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Type BHLE

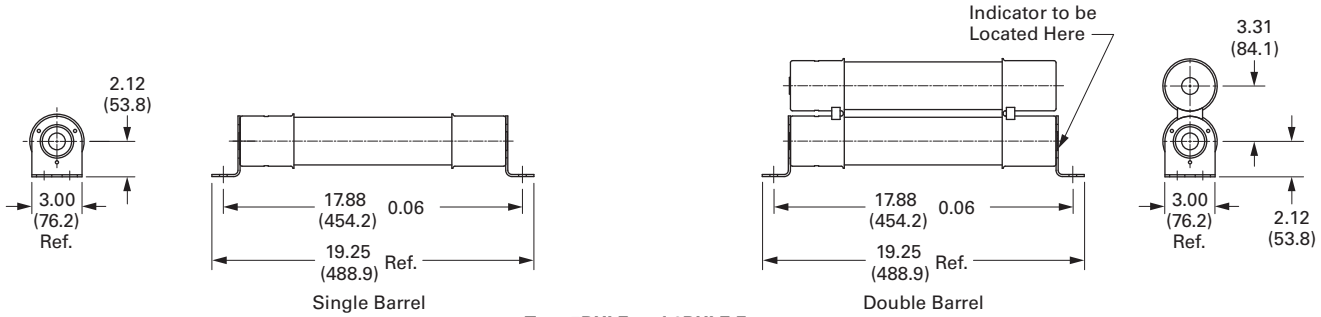
Approximate Dimensions in Inches (mm)

Type BHLE Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal), Indoor, Bolt-In

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
10E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548703	**5BHLE-10E**
15E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548703	**5BHLE-15E**
20E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548703	**5BHLE-20E**
25E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548703	**5BHLE-25E**
30E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548703	**5BHLE-30E**
40E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-40E**
50E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-50E**
65E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-65E**
80E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-80E**
100E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-100E**
125E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-125E**
150E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-150E**
175E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-175E**
200E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-200E**
250E	1	63	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70545805	70545905	70547603	**5BHLE-250E**
300E	2	63	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546005	70546105	70547603	**5BHLE-300E**
350E	2	63	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546005	70546105	70547603	**5BHLE-350E**
400E	2	63	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546005	70546105	70547603	**5BHLE-400E**
450E	2	63	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546005	70546105	70547603	**5BHLE-450E**

Fuse Dimensional Details

Type BHLE Fuse



Type 5BHLE and 8BHLE Fuses

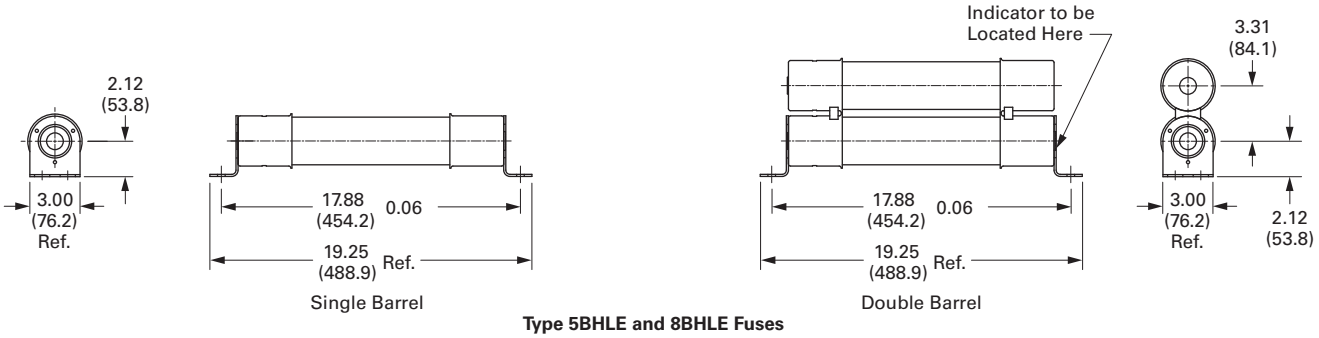
Approximate Dimensions in Inches (mm)

Type BHLE Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal), Indoor, Bolt-In

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
10E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548804	**8BHLE-10E**
15E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548804	**8BHLE-15E**
20E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548804	**8BHLE-20E**
25E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548804	**8BHLE-25E**
30E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70548507	70548607	70548804	**8BHLE-30E**
40E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-40E**
50E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-50E**
65E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-65E**
80E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-80E**
100E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-100E**
125E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-125E**
150E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-150E**
175E	1	50	3.00 (76.2)	15.90 (403.9)	8 (3.63)	70546203	70546303	70547201	**8BHLE-175E**
200E	2	50	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546403	70546503	70547201	**8BHLE-200E**
250E	2	50	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546403	70546503	70547201	**8BHLE-250E**
300E	2	50	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546403	70546503	70547201	**8BHLE-300E**
350E	2	50	3.00 (76.2)	15.90 (403.9)	17 (7.72)	70546403	70546503	70547201	**8BHLE-350E**

Fuse Dimensional Details

Type BHLE Fuse



Type 5BHLE and 8BHLE Fuses

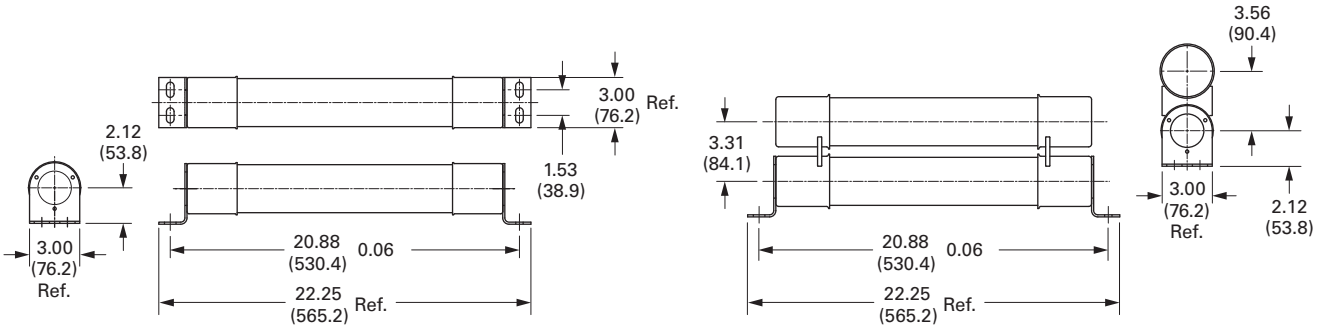
Approximate Dimensions in Inches (mm)

Type BHLE Current Limiting Fuses 15.5 kV Maximum (14.4 kV Nominal), Indoor/Outdoor, Bolt-In

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Peak Let-Through Current	Catalog Number
10E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70548507	70548607	70548805	**15BHLE-10E**
15E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70548507	70548607	70548805	**15BHLE-15E**
20E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70548507	70548607	70548805	**15BHLE-20E**
25E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70548507	70548607	70548805	**15BHLE-25E**
30E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70548507	70548607	70548805	**15BHLE-30E**
40E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-40E**
50E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-50E**
65E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-65E**
80E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-80E**
100E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-100E**
125E	1	63	3.00 (76.2)	18.90 (480.1)	10 (4.54)	70546601	70546701	70547401	**15BHLE-125E**
150E	2	63	3.00 (76.2)	18.90 (480.1)	21 (9.53)	70546601	70546701	70547401	**15BHLE-150E**
175E	2	63	3.00 (76.2)	18.90 (480.1)	21 (9.53)	70546601	70546701	70547401	**15BHLE-175E**
200E	2	63	3.00 (76.2)	18.90 (480.1)	21 (9.53)	70546601	70546701	70547401	**15BHLE-200E**
250E	2	63	3.00 (76.2)	18.90 (480.1)	21 (9.53)	70546601	70546701	70547401	**15BHLE-250E**

Fuse Dimensional Details

Type BHLE Fuse



Type 15BHLE Fuses

Type HCL

Type HCL Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal), Indoor

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Approximate Shipping Weight Lbs (kg)	Mounting Type	Live Parts (Includes End Fittings) Catalog Number	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
10E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70548505	70548605	70548702	**5HCL-10E**
15E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70548505	70548605	70548702	**5HCL-15E**
20E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70548505	70548605	70548702	**5HCL-20E**
25E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70548505	70548605	70548702	**5HCL-25E**
30E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70548505	70548605	70548702	**5HCL-30E**
40E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-40E**
50E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-50E**
65E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-65E**
80E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-80E**
100E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-100E**
125E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-125E**
150E	1	63	3.00 (76.2)	Clip-lock	9 (4.09)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-150E**
200E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-200E**
250E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70545803	70545903	70547602	**5HCL-250E**
300E	2	63	3.00 (76.2)	Clip-lock	20 (9.08)	Non-disconnect	**HCL-NL-1**	70546003	70516103	70547602	**5HCL-300E**
400E	2	63	3.00 (76.2)	Clip-lock	20 (9.08)	Non-disconnect	**HCL-NL-1**	70546003	70516103	70547602	**5HCL-400E**
450E	2	63	3.00 (76.2)	Clip-lock	20 (9.08)	Non-disconnect	**HCL-NL-1**	70546003	70516103	70547602	**5HCL-450E**
500E	2	63	3.00 (76.2)	Clip-lock	20 (9.08)	Non-disconnect	**HCL-NL-1**	66703401	66703501	66703701	**5HCL-500E**
600E	2	63	3.00 (76.2)	Clip-lock	20 (9.08)	Non-disconnect	**HCL-NL-1**	66703401	66703501	66703701	**5HCL-600E**
750E	3	63	3.00 (76.2)	Bolt-in	30 (13.62)	—	—	66703401	66703501	66703701	**5HCL-750E**
	3	63	3.00 (76.2)	Bolt-in	30 (13.62)	—	—	66703401	66703501	66703701	**5BHCL-750E**
900E	3	63	3.00 (76.2)	Bolt-in	30 (13.62)	—	—	66703401	66703501	66703701	**5HCL-900E**
	3	63	3.00 (76.2)	Bolt-in	30 (13.62)	—	—	66703401	66703501	66703701	**5BHCL-900E**

Type HCL Current Limiting Fuses (15.5 kV Maximum, 14.4 kV Nominal), Indoor

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Approximate Shipping Weight Lbs (kg)	Mounting Type	Live Parts (Includes End Fittings) Catalog Number	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
10E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70548503	70548603	70548803	**15HCL-10E**
15E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70548503	70548603	70548803	**15HCL-15E**
20E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70548503	70548603	70548803	**15HCL-20E**
25E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70548503	70548603	70548803	**15HCL-25E**
30E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	70548503	70548603	70548803	**15HCL-30E**
40E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-40E**
50E	1	63	3.00 (76.2)	Clip-lock	10 (4.54)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-50E**
65E	1	50	3.00 (76.2)	Clip-lock	12 (5.45)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-65E**
80E	1	50	3.00 (76.2)	Clip-lock	12 (5.45)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-80E**
100E	1	50	3.00 (76.2)	Clip-lock	12 (5.45)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-100E**
125E	1	50	3.00 (76.2)	Clip-lock	12 (5.45)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-125E**
150E	2	50	3.00 (76.2)	Clip-lock	24 (10.90)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-150E**
200E	2	50	3.00 (76.2)	Clip-lock	24 (10.90)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-200E**
250E	2	50	3.00 (76.2)	Clip-lock	24 (10.90)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-250E**
300E	2	50	3.00 (76.2)	Clip-lock	24 (10.90)	Non-disconnect	**HCL-NL-1**	66703201	66703301	70547402	**15HCL-300E**

Note

Approximate Dimensions in Inches (mm).

3

Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

5.5 and 15.5 kV Clip Lock Mounted

Ampere Rating	Number of Barrels	Figure Number	A	B	C	Interrupting Rating rms (kA Sym.)
5.5 kV Maximum—Clip Lock Style—15.25-Inch (387.4 mm) Clip Centers—3.00-Inch (76.2 mm) Barrel Diameter						
10E–150E	1	A	16.81 (427.0)	16.12 (409.4)	①	63
5.5 kV Maximum—Clip Lock Style—21.25-Inch (539.8 mm) Clip Centers—3.00-Inch (76.2 mm) Barrel Diameter						
200E–600E	1	A	22.81 (579.4)	22.12 (561.8)	①	63

15.5 kV Clip Lock Mounted

Ampere Rating	Number of Barrels	Figure Number	A	B	C	Interrupting Rating rms (kA Sym.)
15.5 kV Maximum—Clip Lock Style—21.25-Inch (539.8 mm) Clip Centers—3.00-Inch (76.2 mm) Barrel Diameter						
65E–125E	1	A	22.81 (579.4)	22.12 (561.8)	①	63
150E–300E	2	B	22.81 (579.4)	22.12 (561.8)	①	50
15.5 kV Maximum—Clip Lock Style—18.25-Inch (463.6 mm) Clip Centers—3.00-Inch (76.2 mm) Barrel Diameter						
10E–50E	1	A	19.81 (503.2)	19.12 (485.6)	①	63

Bolt-In Series—5.5 kV

Ampere Rating	Number of Barrels	Figure Number	A	B	C	D	Interrupting Rating rms (kA Sym.)
5.5 kV Maximum—Bolt-in Style—23.73-Inch (602.7 mm) Hole Centers—3.00-Inch (76.2 mm) Barrel Diameter							
750E, 900E	3	C	25.11 (637.8)	22.37 (568.2)	23.73 (602.7)	①	63

Type HCL Fuse Dimensional Details

Type HCL-14 Fuses

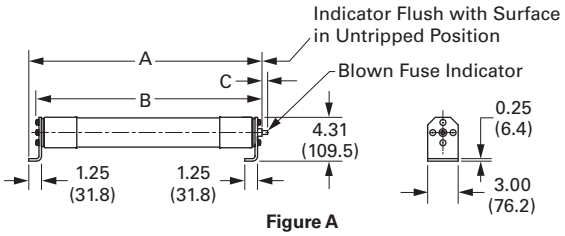


Figure A

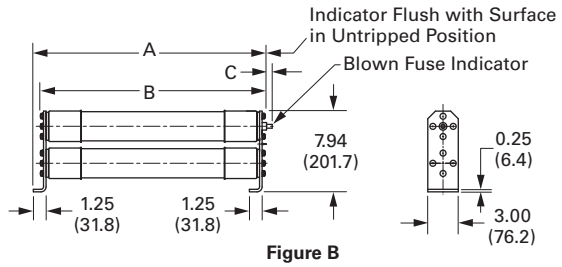


Figure B

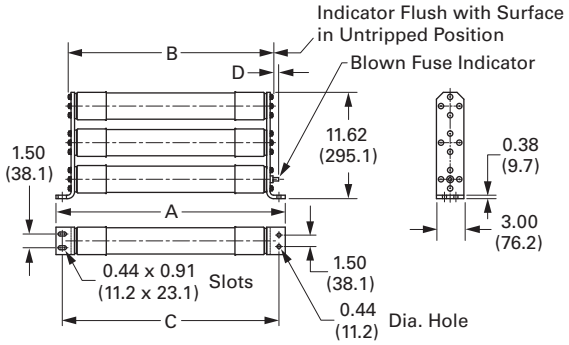
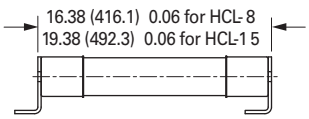


Figure C

Type HCL Fuses



Note

① 0.5 (12.7) tripped force 2 lb (0.9 kg).

Type CLS

Type CLS Current Limiting Fuses

Maximum Design Voltage (kV)	Current Rating (Amperes)	"R" Designation	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves			Catalog Number
									Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	
2.54	25	—	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-25**
	70	2R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-2R**
	100	3R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-3R**
	130	4R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-4R**
	150	5R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-5R**
	170	6R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-6R**
	200	9R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-9R**
	230	12R	1	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2CLS-12R**
	390	18R	2	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2CLS-18R**
	450	24R	2	50	3.00 (76.2)	7.00 (177.8)	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2CLS-24R**
	25	—	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-25**
	70	2R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2ACLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2ACLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2ACLS-24R**
	25	—	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-25**
	70	2R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	8 (3.63)	66664702	66664704	66700202	**2BCLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	17 (7.72)	66664702	66664704	66700202	**2BCLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	17 (7.72)	66664702	66664704	66700202	**2BCLS-24R**
	25	—	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-25**
	70	2R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	10.80 (274.3)	7 (3.18)	66664702	66664704	66700202	**2HCLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2HCLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	10.80 (274.3)	16 (7.26)	66664702	66664704	66700202	**2HCLS-24R**

Note

Approximate Dimensions in Inches (mm).

Type CLS Current Limiting Fuses, continued

Maximum Design Voltage (kV)	Current Rating (Amperes)	"R" Designation	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves			Catalog Number
									Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	
5.08	30	—	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-30**
	70	2R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-2R**
	100	3R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-3R**
	130	4R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-4R**
	150	5R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-5R**
	170	6R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-6R**
	200	9R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-9R**
	230	12R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5CLS-12R**
	390	18R	2	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5CLS-18R**
	450	24R	2	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5CLS-24R**
5.08	30	—	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-30**
	70	2R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5ACLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5ACLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5ACLS-24R**
4.3	480	26R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**4ACLS-26R**
5.08	30	—	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-30**
	70	2R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5BCLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5BCLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5BCLS-24R**
4.3	480	26R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**4BCLS-26R**
5.08	30	—	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-30**
	70	2R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-6R**
	200	9R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66690602	66690702	66700203	**5HCLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5HCLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66690602	66690702	66700203	**5HCLS-24R**

Note

Approximate Dimensions in Inches (mm).

Type CLS Current Limiting Fuses, continued

Maximum Design Voltage (kV)	Current Rating (Amperes)	"R" Designation	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves: Minimum Melting Time	Performance Curves: Total Clearing Time	Performance Curves: Peak Let-Through Current	Catalog Number
5.08	70	2R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-2R**
	100	3R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-3R**
	130	4R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-4R**
	150	5R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-5R**
	170	6R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-6R**
	200	9R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66690602	66690702	66700203	**5CLS70-9R**
	230	12R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-12R**
	390	18R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-18R**
	450	24R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-24R**
	600	32R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-32R**
	650	36R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-36R**
	700	44R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66690602	66690702	66700203	**5CLS70-44R**
5.5	70	2R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-2R**
	100	3R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-3R**
	130	4R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-4R**
	150	5R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-5R**
	170	6R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-6R**
	200	9R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-9R**
	230	12R	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	51285302	51285402	66700204	**5LCLS-12R**
	390	18R	2	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	22 (9.99)	51285302	51285402	66700204	**5LCLS-18R**
	450	24R	2	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	22 (9.99)	51285302	51285402	66700204	**5LCLS-24R**
8.3	70	2R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**8CLS-2R**
	100	3R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**8CLS-3R**
	130	4R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**8CLS-4R**
	150	5R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**8CLS-5R**
	170	6R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**8CLS-6R**
7.2	200	9R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**7CLS-9R**
	230	12R	1	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	7 (3.18)	66700602	66700702	66700205	**7CLS-12R**
	390	18R	2	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	16 (7.26)	66700602	66700702	66700205	**7CLS-18R**
	450	24R	2	50	3.00 (76.2)	12.00 (304.8)	15.90 (403.9)	16 (7.26)	66700602	66700702	66700205	**7CLS-24R**
8.3	70	2R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-6R**
7.2	200	9R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	7 (3.18)	66700602	66700702	66740205	**7BCLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	16 (7.26)	66700602	66700702	66740205	**7BCLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	16 (7.26)	66700602	66700702	66740205	**7BCLS-24R**
8.3	70	2R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**8ACLS-2R**
	100	3R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**8ACLS-3R**
	130	4R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**8ACLS-4R**
	150	5R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**8ACLS-5R**
	170	6R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**8ACLS-6R**

Note

Approximate Dimensions in Inches (mm).

Type CLS Current Limiting Fuses, continued

Maximum Design Voltage (kV)	Current Rating (Amperes)	"R" Designation	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves			Catalog Number
									Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	
7.2	200	9R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**7ACLS-9R**
	230	12R	1	50	3.00 (76.2)	Not applicable	15.90 (403.9)	8 (3.63)	66700602	66700702	66740205	**7ACLS-12R**
	390	18R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66700602	66700702	66740205	**7ACLS-18R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	17 (7.72)	66700602	66700702	66740205	**7ACLS-24R**
	450	24R	2	50	3.00 (76.2)	Not applicable	15.90 (403.9)	20 (9.08)	66700602	66700702	66740205	**7CLS70-24R**
	650	36R	3	50	3.00 (76.2)	Not applicable	15.90 (403.9)	30 (13.62)	66700602	66700702	66740205	**7CLS70-36R**
	700	44R	2	50	4.00 (101.6)	Not applicable	15.90 (403.9)	40 (18.16)	66700602	66700702	66740205	**7CLS70-44R**
8.3	15	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-15**
	30	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-30**
	60	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-60**
	70	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-70**
	90	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-90**
	110	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-110**
	125	Not applicable	1	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	11 (4.99)	66664202	66664302	66679802	**8CLS-125**
	150	Not applicable	2	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	22 (9.99)	66664202	66664302	66679802	**8CLS-150**
	200	Not applicable	2	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	22 (9.99)	66664202	66664302	66679802	**8CLS-200**
	225	Not applicable	2	50	3.00 (76.2)	14.00 (355.6)	17.90 (454.7)	22 (9.99)	66664202	66664302	66679802	**8CLS-225**

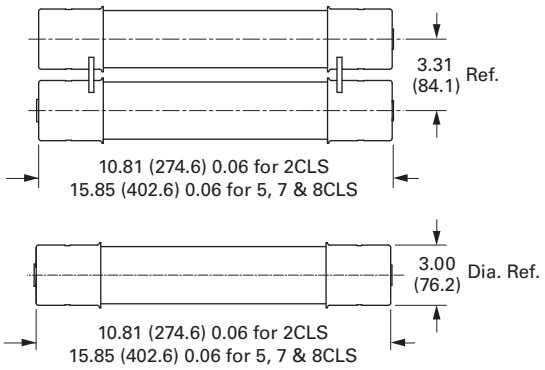
Note

Approximate Dimensions in Inches (mm).

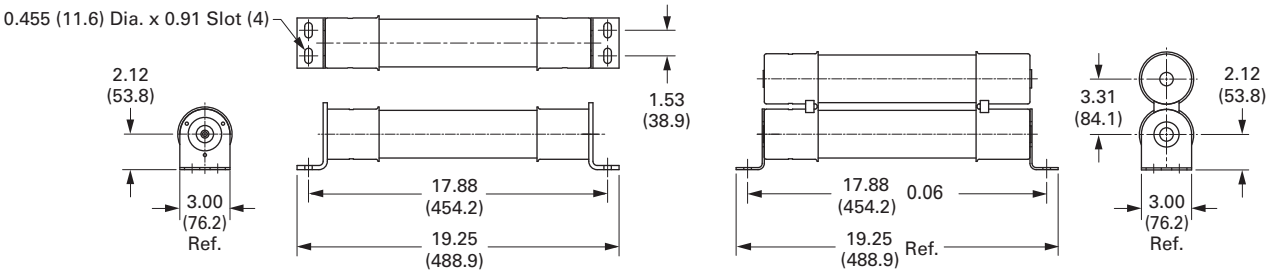
Fuse Dimensional Details

Approximate Dimensions in Inches (mm)

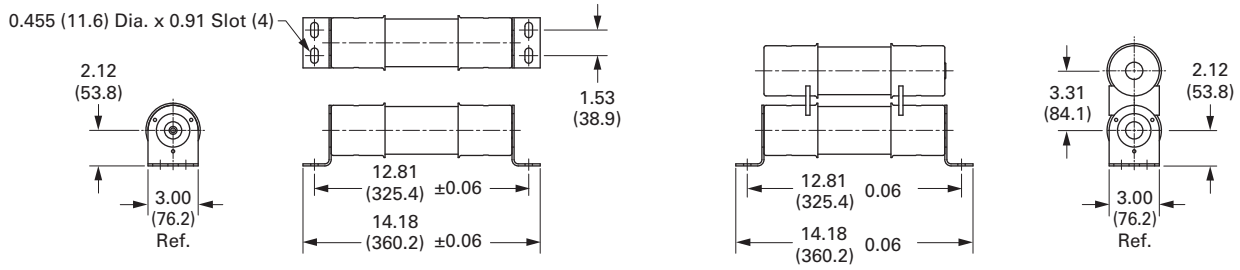
Type CLS Fuse



Type BCLS Fuse



Type 5BCLS and 7BCLS Fuses



Type 2BCLS Fuse

Type CLS Mountings and Hardware

Maximum Design Voltage (kV)	Ampere Rating	Fuse Mounting Type	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ① Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ① Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) Catalog Number	End Fittings (Disconnect Only) ① Catalog Number
2.54	25–230	Non-disconnect	60	**2CLE-PNM-D**	**2CLE-GNM-D**	**CLE-NL-D**	—
		Disconnect	60	**2CLE-PDM-D**	**2CLE-GDM-E**	**CLE-DL-D**	**CLE-DF-D**
	390–450	Non-disconnect	60	**2CLE-PNM-E**	**2CLE-GNM-E**	**CLE-NL-E**	—
		Disconnect	60	**2CLE-PDM-E**	**2CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**
5.5 (CLS)	30–230	Non-disconnect	60	**5HLE-PNM-D**	**5HLE-GNM-D**	**CLE-NL-D**	—
		Disconnect	60	**5HLE-PDM-D**	**5HLE-GDM-E**	**CLE-DL-D**	**CLE-DF-D**
	390–480	Non-disconnect	60	**5HLE-PNM-E**	**5HLE-GNM-E**	**CLE-NL-E**	—
		Disconnect	60	**5HLE-PDM-E**	**5HLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**
5.5 (LCLS)	70–230	Non-disconnect	60	**5CLE-PNM-D**	**5CLE-GNM-D**	**CLE-NL-D**	—
		Disconnect	60	**5CLE-PDM-D**	**5CLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
			75	**8CLE-PDM-D**	**8CLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
	390–450	Non-disconnect	60	**5CLE-PNM-E**	**5CLE-GNM-E**	**CLE-NL-E**	—
		Disconnect	60	**5CLE-PDM-E**	**5CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**
			75	**8CLE-PDM-E**	**8CLE-PDM-E**	**CLE-DL-E**	**CLE-DF-E**
8.3	70–100	Non-disconnect	75	**8HLE-PNM-D**	**8HLE-GNM-D**	**CLE-NL-D**	—
	130–230	Disconnect	75	**8HLE-PDM-D**	**8HLE-GDM-D**	**CLE-DL-D**	**CLE-DF-D**
7.2	390–450	Non-disconnect	75	**8HLE-PDM-E**	**8HLE-GNM-E**	**CLE-NL-E**	—
		Disconnect	75	**8HLE-PDM-E**	**8HLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**
8.3	15–30	Non-disconnect	75	**8CLE-PNM-D**	**8CLE-GNM-D**	**CLE-NL-D**	—
	60–125	Disconnect	75	**8CLE-PDM-D**	**8CLE-GDM-D**	**CLE-DL-D**	**CLS-DF-D**
	150–225	Non-disconnect	75	**8CLE-PNM-E**	**8CLE-GNM-E**	**CLE-NL-E**	—
		Disconnect	75	**8CLE-PDM-E**	**8CLE-GDM-E**	**CLE-DL-E**	**CLE-DF-E**

Note

① Disconnect only.

Type CLPT

Indicating

Type CLPT Current Limiting Fuses 2.475 kV Maximum (2.4 kV Nominal)

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves: Minimum Melting Time	Performance Curves: Total Clearing Time	Performance Curves: Peak Let-Through Current	Catalog Number
0.25E	63	0.81 (20.6)	—	4.50 (114.3)	0.25 (0.11)	56357202	59883702	63933702	**2NCLPT-.25E**
0.5E	63	0.81 (20.6)	—	4.50 (114.3)	0.25 (0.11)	56357202	59883702	63933702	**2NCLPT-.5E**
1E	40	0.81 (20.6)	—	4.50 (114.3)	0.25 (0.11)	56357202	59883702	63933702	**2NCLPT-1E**
2E	40	0.81 (20.6)	—	4.50 (114.3)	0.25 (0.11)	56357202	59883702	63933702	**2NCLPT-2E**
5E	25	0.81 (20.6)	—	4.50 (114.3)	0.25 (0.11)	56357202	59883702	63933702	**2NCLPT-5E**

Note

Approximate Dimensions in Inches (mm).

Type CLPT Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal)

Non-Indicating

Indicating

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves: Minimum Melting Time	Performance Curves: Total Clearing Time	Performance Curves: Peak Let-Through Current	Catalog Number
Non-Indicating									
0.5E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-.5E**
1E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-1E**
2E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-2E**
3E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-3E**
4E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-4E**
5E	63	0.81 (20.6)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**5NCLPT-5E**
0.5E	50	1.00 (25.4)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**317B487H02**
1E	50	1.00 (25.4)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**317B487H06**
2E	50	1.00 (25.4)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**317B487H03**
3E	50	1.00 (25.4)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**317B487H04**
5E	50	1.00 (25.4)	—	5.63 (143.0)	0.25 (0.11)	66702402	66702502	66704101	**317B487H05**
0.5E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-.5E-A**
1E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-1E-A**
2E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-2E-A**
3E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-3E-A**
5E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-5E-A**
10E	63	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	70548302	70548402	63934002	**5NCLPT-10E-A**
Indicating									
0.5E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-.5E**
1E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-1E**
1.5E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-1.5E**
3E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-3E**
5E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-5E**
10E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.2 (0.54)	56353206	56353306	63934001	**5CLPT-10E**

Type CLPT Mountings and Hardware 5.5 kV Maximum (4.8 kV Nominal) ③

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ②: Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ②: Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
0.5–2	Non-disconnect	60	**5CLPT-PNM-A**	**5CLPT-GNM-A**	**CLPT-NL**	—
	Disconnect	60	**5CLPT-PDM-A**	**5CLPT-GDM-A**	**CLPT-DL**	**CLPT-DF**
3–10	Non-disconnect	60	**5CLPT-PNM-B**	**5CLPT-GNM-B**	**CLPT-NL**	—
	Disconnect	60	**5CLPT-PDM-B**	**5CLPT-GDM-B**	**CLPT-DL**	**CLPT-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

③ Refers only to 5CLPT and 5NCLPT-A fuses only.

Approximate Dimensions in Inches (mm).

Type CLPT Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal)

Non-Indicating

Indicating

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves: Minimum Melting Time	Performance Curves: Total Clearing Time	Performance Curves: Peak Let-Through Current	Catalog Number
Non-Indicating									
2E	25	0.81 (20.6)	—	8.00 (203.2)	0.25 (0.11)	56357206	59883706	63933704	**8NCLPT-2E**
4E	25	0.81 (20.6)	—	8.00 (203.2)	0.25 (0.11)	56357206	59883706	63933704	**8NCLPT-4E**
10E	50	1.10 (27.9)	—	5.00 (127.0)	0.5 (0.23)	56357206	59883706	63933704	**8NCLPT-0E**
1E	50	1.10 (27.9)	—	5.00 (127.0)	0.5 (0.23)	56357206	59883706	63933704	**8NCLPT-1E**
5E	50	1.10 (27.9)	—	5.00 (127.0)	0.5 (0.23)	56357206	59883706	63933704	**8NCLPT-5E**
0.5E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.5 (0.70)	70548303	70548403	63934002	**8NCLPT-.5E-A**
1E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.5 (0.70)	70548303	70548403	63934002	**8NCLPT-1E-A**
2E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.5 (0.70)	70548303	70548403	63934002	**8NCLPT-2E-A**
3E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.5 (0.70)	70548303	70548403	63934002	**8NCLPT-3E-B**
5E	50	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	70548303	70548403	63934002	**8NCLPT-5E-B**
10E	50	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	70548303	70548403	63934002	**8NCLPT-10E-B**
Indicating									
.5E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.5 (0.70)	56353206	56353306	63934001	**8CLPT-.5E**
3E	80	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.6 (0.73)	56353206	56353306	63934001	**8CLPT-3E**
5E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.6 (0.73)	56353206	56353306	63934001	**8CLPT-5E**
10E	50	1.60 (40.6)	8.10 (205.7)	9.50 (241.3)	1.6 (0.73)	56353206	56353306	63934001	**8CLPT-10E**

Type CLPT Mountings and Hardware 8.3 kV Maximum (7.2 kV Nominal) ③

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ②: Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ②: Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ②: Catalog Number	End Fittings (Disconnect Only): Catalog Number
0.5–2	Non-disconnect	75	**8CLPT-PNM-A**	**8CLPT-GNM-A**	**CLPT-NL**	—
	Disconnect	75	**8CLPT-PDM-A**	**8CLPT-GDM-A**	**CLPT-DL**	**CLPT-DF**
3–10	Non-disconnect	75	**8CLPT-PNM-B**	**8CLPT-GNM-B**	**CLPT-NL**	—
	Disconnect	75	**8CLPT-PDM-B**	**8CLPT-GDM-B**	**CLPT-DL**	**CLPT-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.
② End fittings supplied only when required.
③ Refers only to 8CLPT and 8NCLPT-A or -B fuses only.

Approximate Dimensions in Inches (mm).

Type CLPT Current Limiting Fuses 15.5 kV Maximum (7.2 kV Nominal)

Non-Indicating

Indicating

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves: Minimum Melting Time	Performance Curves: Total Clearing Time	Performance Curves: Peak Let-Through Current	Catalog Number
Non-Indicating									
0.5E	63	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	70548303	70548403	63934002	**15NCLPT-.5E**
1E	63	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	70548303	70548403	63934002	**15NCLPT-1E**
2E	63	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	70548303	70548403	63934002	**15NCLPT-1.5E**
3E	63	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	70548303	70548403	63934002	**15NCLPT-3E**
5E	63	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	70548303	70548403	63934002	**15NCLPT-5E**
10E	63	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	70548303	70548403	63934002	**15NCLPT-10E**
Indicating									
0.5E	80	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	56353206	56353306	63934001	**15CLPT-.5E**
1E	80	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	56353206	56353306	63934001	**15CLPT-1E**
2E	80	1.60 (40.6)	11.50 (292.1)	12.90 (327.7)	1.6 (0.73)	56353206	56353306	63934001	**15CLPT-1.5E**
3E	80	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	56353206	56353306	63934001	**15CLPT-3E**
5E	80	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	56353206	56353306	63934001	**15CLPT-5E**
10E	50	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	56353206	56353306	63934001	**15CLPT-10E**

Type CLPT Mountings and Hardware 15.5 kV Maximum (14.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ②: Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ②: Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ②: Catalog Number	End Fittings (Disconnect Only): Catalog Number
0.5–2	Non-disconnect	95	**15CLPT-PNM-A**	**15CLPT-GNM-A**	**CLPT-NL**	—
	Disconnect	95	**15CLPT-PDM-A**	**15CLPT-GDM-A**	**CLPT-DL**	**CLPT-DF**
3–10	Non-disconnect	95	**15CLPT-PNM-B**	**15CLPT-GNM-B**	**CLPT-NL**	**CLPT-DF**
	Disconnect	95	**15CLPT-PDM-B**	**15CLPT-GDM-B**	**CLPT-DL**	—

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CLPT Current Limiting Fuses 25.5 kV Maximum (23.0 kV Nominal)

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
0.5E	44	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	56353208	56353308	63933901	**25CLPT-.5E**
1E	44	1.60 (40.6)	16.10 (408.9)	17.60 (447.0)	2 (0.91)	56353208	56353308	63933901	**25CLPT-1E**

Type CLPT Mountings and Hardware 25.5 kV Maximum (23.0 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
0.5E–1E	Non-disconnect	150	**25CLPT-PNM-A**	—	**25CLPT-NL**	—
	Disconnect	150	**25CLPT-PDM-A**	—	**25CLPT-DL**	**CLPT-DF**

Type CLPT Current Limiting Fuses 38.0 kV Maximum (34.5 kV Nominal)

Current Rating (Amperes)	Interrupting Rating rms (kA Sym.)	Diameter	Clip Center	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	Catalog Number
0.5E	44	1.60 (40.6)	17.10 (434.3)	18.60 (472.4)	2 (0.91)	56353208	56353308	63933901	**38CLPT-.5E**

Type CLPT Mountings and Hardware 38.0 kV Maximum (34.5 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
0.5E	Disconnect	—	Not applicable	Not applicable	**25CLPT-NL**	**CLPT-DF**
	Non-disconnect	—	Not applicable	Not applicable	**25CLPT-DL**	—

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CX

Type CX

Type CX Current Limiting Fuses 4.3 kV Maximum (2.4 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Fuse Mounting Code	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	I^2t	Catalog Number
Non-Indicating											
18C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CX-18C**
25C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CX-25C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CX-35C**
45C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544101	TC70544501	TC70544901	TC70545101	**4CX-45C**
50C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544101	TC70544501	TC70544901	TC70545101	**4CX-50C**
60C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544502	TC70544901	TC70545101	**4CX-60C**
65C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CX-65C**
75C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CX-75C**
80C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544502	TC70544901	TC70545101	**4CX-80C**
100C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CX-100C**
Indicating											
18C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CXI-18C**
25C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CXI-25C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	1 (0.45)	TC70544101	TC70544501	TC70544901	TC70545101	**4CXI-35C**
45C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544101	TC70544501	TC70544901	TC70545101	**4CXI-45C**
50C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544101	TC70544501	TC70544901	TC70545101	**4CXI-50C**
60C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544502	TC70544901	TC70545101	**4CXI-60C**
65C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CXI-65C**
75C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CXI-75C**
80C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544502	TC70544901	TC70545101	**4CXI-80C**
100C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544102	TC70544501	TC70544901	TC70545101	**4CXI-100C**

Type CX Mountings and Hardware 4.3 kV Maximum (2.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Size	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
18C–100C	Non-disconnect	A	60	—	**5CX-GNM-G**	**CX-NL**	—
	Disconnect	A	60	—	**5CX-GDM-G**	**CX-DL**	**CX-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CX

Type CX Current Limiting Fuses 5.5 kV Maximum (4.8 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Fuse Mounting Code	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	I^2t	Catalog Number
Non-Indicating											
10C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-10C**
12C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-12C**
18C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-18C**
20C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-20C**
21C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CX-21C**
25C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-25C**
30C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-30C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CX-35C**
40C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-40C**
50C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-50C**
60C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CX-60C**
65C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-65C**
75C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CX-75C**
Indicating											
10C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-10C**
12C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-12C**
18C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-18C**
20C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-20C**
21C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CXI-21C**
25C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-25C**
30C	1	50	G	1.13 (28.7)	10.00 (254.0)	1 (0.45)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-30C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CXI-35C**
40C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-40C**
50C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-50C**
60C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544202	TC70544602	TC70544902	TC70545201	**5CXI-60C**
65C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-65C**
75C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544201	TC70544601	TC70544902	TC70545201	**5CXI-75C**

Type CX Mountings and Hardware 5.5 kV Maximum (4.8 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Size	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
10C–75C	Non-disconnect	A	60	—	**5CX-GNM-G**	**CX-NL**	—
	Disconnect	A	60	—	**5CX-GDM-G**	**CX-DL**	**CX-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CX

Type CX Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Fuse Mounting Code	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	I^2t	Catalog Number
Non-Indicating											
3.5C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CX-3.5C**
4C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CX-4C**
4.5C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-4.5C**
6C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-6C**
7C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CX-7C**
8C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-8C**
10C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-10C**
12C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-12C**
15C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CX-15C**
18C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-18C**
20C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-20C**
25C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-25C**
30C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-30C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CX-35C**
40C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CX-40C**
Indicating											
3.5C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CXI-3.5C**
4C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CXI-4C**
4.5C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-4.5C**
6C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-6C**
7C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CXI-7C**
8C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-8C**
10C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-10C**
12C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-12C**
15C	1	50	G	1.13 (28.7)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CXI-15C**
18C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-18C**
20C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-20C**
25C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-25C**
30C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-30C**
35C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544302	TC70544702	TC70545001	TC70545301	**8CXI-35C**
40C	1	50	G	2.00 (50.8)	10.00 (254.0)	2 (0.91)	TC70544301	TC70544701	TC70545001	TC70545301	**8CXI-40C**

Type CX Mountings and Hardware 8.3 kV Maximum (7.2 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Size	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
3.5C–40C	Non-disconnect	B	75	—	**8CX-GNM-G**	**CX-NL**	—
	Disconnect	B	75	—	**8CX-GDM-G**	**CX-DL**	**CX-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CX

Type CX Current Limiting Fuses 15.5 kV Maximum (14.4 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Fuse Mounting Code	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current	I^2t	Catalog Number
Non-Indicating											
4C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-4C**
6C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-6C**
7C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544402	TC70544802	TC70545002	TC70545401	**15CX-7C**
8C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-8C**
10C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-10C**
12C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-12C**
15C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544402	TC70544802	TC70545002	TC70545401	**15CX-15C**
18C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-18C**
20C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-20C**
25C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-25C**
30C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-30C**
40C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CX-40C**
Indicating											
4C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-4C**
6C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-6C**
7C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544402	TC70544802	TC70545002	TC70545401	**15CXI-7C**
8C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-8C**
10C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-10C**
12C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-12C**
15C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544402	TC70544802	TC70545002	TC70545401	**15CXI-15C**
18C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-18C**
20C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-20C**
25C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-25C**
30C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-30C**
40C	1	50	G	2.00 (50.8)	14.30 (363.2)	2 (0.91)	TC70544401	TC70544801	TC70545002	TC70545401	**15CXI-40C**

Type CX Mountings and Hardware 15.5 kV Maximum (14.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Size	Voltage BIL (kV)	Mounting (Including Live Parts, End Fittings) ② Porcelain Insulator Catalog Number	Mounting (Including Live Parts, End Fittings) ② Glass-Polyester Insulator Catalog Number	Live Parts (Including End Fittings) ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
4C–40C	Non-disconnect	C	95	—	**15CX-GNM-G**	**CX-NL**	—
	Disconnect	C	95	—	**15CX-GDM-G**	**CX-DL**	**CX-DF**

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CXN

Type CXN

Type CXN Current Limiting Fuses 8.3 kV Maximum (7.2 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Performance Curves Total Clearing Time	Performance Curves Peak Let-Through Current		Catalog Number
60C	1	50	3.00 (76.2)	18.80 (477.5)	8 (3.63)	66675102	66675202	66664902		**8CXN-60C**
100C	1	50	3.00 (76.2)	18.80 (477.5)	8 (3.63)	66675102	66675202	66664902		**8CXN-100C**
125C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66675102	66675202	66664902		**8CXN-125C**
150C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66675102	66675202	66664902		**8CXN-150C**
200C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66675102	66675202	66664902		**8CXN-200C**
250C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66675102	66675202	66664902		**8CXN-250C**
120C	2	50	3.00 (76.2)	18.80 (477.5)	16 (7.26)	66675104	66675204	66664902	2 X 60C	**8CXN-120C**
200C	2	50	3.00 (76.2)	18.80 (477.5)	16 (7.26)	66675104	66675204	66664902	2 X 100C	**8CXN-200C**
250C	2	50	3.00 (76.2)	18.80 (477.5)	16 (7.26)	66675104	66675204	66664902	2 X 125C	**8CXN-250C**
300C	2	50	4.00 (101.6)	18.80 (477.5)	28 (12.71)	66675104	66675204	66664902	2 X 150C	**8CXN-300C**

Type CXN Mountings and Hardware 8.3 kV Maximum (7.2 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage LIWL (BIL)	Glass Polyester Insulator Mounting (Including Live Parts, End Fittings) ② Catalog Number	Live Parts ② Catalog Number	End Fittings (Disconnect Only) Catalog Number
60C–100C Single barrel	Non-disconnect	95	**15CXN-GNM-D**	**15CXN-NL-D**	—
	Non-disconnect	95	**15CXN-GNM-G**	**15CXN-NL-G**	—
	Disconnect	95	**15CXN-GDM-G**	**15CXN-DL-G**	**15CXN-DF-G**
125C–250C Single barrel	Non-disconnect	95	**15CXN-GNM-F**	**15CXN-NL-F**	—
	Non-disconnect	95	**15CXN-GNM-G**	**15CXN-NL-G**	—
	Disconnect	95	**25CXN-GDM-G**	**15CXN-DL-G**	**15CXN-DF-G**
120C, 200C Double barrel	Non-disconnect	95	**15CXN-GNM-D**	**15CXN-NL-D**	—
250C, 300C Double barrel	Non-disconnect	95	**15CXN-GNM-F**	**15CXN-NL-F**	—

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CXN

Type CXN Current Limiting Fuses 15.5 kV Maximum (14.4 kV Nominal)

Current Rating (Amperes)	Barrel Number	Interrupting Rating rms (kA Sym.)	Diameter	Length	Approximate Shipping Weight Lbs (kg)	Performance Curves Minimum Melting Time	Total Clearing Time	Peak Let-Through Current		Catalog Number
45C	1	50	3.00 (76.2)	18.80 (477.5)	8 (3.63)	66674802	66675002	66665002		**15CXN-45C**
60C	1	50	3.00 (76.2)	18.80 (477.5)	8 (3.63)	66674802	66675002	66665002		**15CXN-60C**
75C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66674802	66675002	66665002		**15CXN-75C**
85C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66674802	66675002	66665002		**15CXN-85C**
100C	1	50	4.00 (101.6)	18.80 (477.5)	14 (6.36)	66674802	66675002	66665002		**15CXN-100C**
90C	2	50	3.00 (76.2)	18.80 (477.5)	16 (7.26)	66674804	66675004	66665002	2 X 45C	**15CXN-90C**
120C	2	50	3.00 (76.2)	18.80 (477.5)	16 (7.26)	66674804	66675004	66665002	2 X 60C	**15CXN-120C**
150C	2	50	4.00 (101.6)	18.80 (477.5)	28 (12.71)	66674804	66675004	66665002	2 X 75C	**15CXN-150C**
175C	2	50	4.00 (101.6)	18.80 (477.5)	28 (12.71)	66674804	66675004	66665002	2 X 85C	**15CXN-175C**

Type CXN Mountings and Hardware 15.5 kV Maximum (14.4 kV Nominal)

Ampere Rating	Fuse Mounting Type ①	Voltage LIWL (BIL)	Glass Polyester Insulator Mounting (Including Live Parts, End Fittings) ② Catalog Number	Live Parts ② Catalog Number	End Fittings (Disconnect Only Catalog Number
45C–60C Single barrel	Non-disconnect	95	**15CXN-GNM-D**	**15CXN-NL-D**	—
	Non-disconnect	95	**15CXN-GNM-G**	**15CXN-NL-G**	—
	Disconnect	95	**15CXN-GDM-G**	**15CXN-DL-G**	**15CXN-DF-G**
75C–100C Single barrel	Non-disconnect	95	**15CXN-GNM-F**	**15CXN-NL-F**	—
	Non-disconnect	95	**15CXN-GNM-G**	**15CXN-NL-G**	—
	Disconnect	95	**25CXN-GDM-G**	**15CXN-DL-G**	**15CXN-DF-G**
90C, 120C Double barrel	Non-disconnect	95	**15CXN-GNM-D**	**15CXN-NL-D**	—
150C, 175C Double barrel	Non-disconnect	95	**15CXN-GNM-F**	**15CXN-NL-F**	—

Notes

① See **Page V4-T3-132** for diagram of typical mounting.

② End fittings supplied only when required.

Approximate Dimensions in Inches (mm).

Type CXF

Type CXF Indicated Full-Range Current-Limiting Fuses Mountings and Hardware

Maximum Design Voltage (kV)	Ampere Rating	Mounting Fuse Mounting Type	Voltage BIL (kV)	Catalog Number	Live Parts Catalog Number	End Fittings Catalog Number
5.5	80–100	Non-disconnect	—	—	**CXN-NL-G**	—
	125–200	Disconnect	—	—	**CXN-GL-G**	**CXN-DF-G**
10	6–18	Non-disconnect	75	**8CX-GNM-G**	**CX-NL**	—
	20–50	Disconnect	75	**8CX-GDM-G**	**CX-DL**	**CX-DF**
8.3	65–80	Non-disconnect	—	—	**CXN-NL-G**	—
	100–125	Disconnect	—	—	**CXN-DL-G**	**CXN-DF-G**
17.2	6–18	Non-disconnect	95	**15CX-GNM-G**	**CX-NL**	—
	20–50	Disconnect	95	**15CX-GDM-G**	**CX-DL**	**CX-DF**
15.5	65–80	Non-disconnect	—	—	**CXN-NL-G**	—
	100	Disconnect	—	—	**CXN-DL-G**	**CXN-DF-G**
23	6–18	Non-disconnect	—	—	**CX-NL**	—
	20–50	Disconnect	—	—	**CX-DL**	**CX-DF**

Type DSL

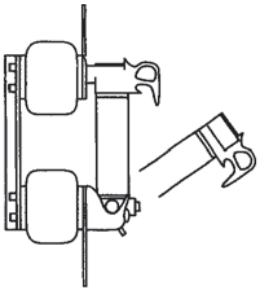
6DSL-B1600

Type DSL Low Voltage Current Limiting Fuse

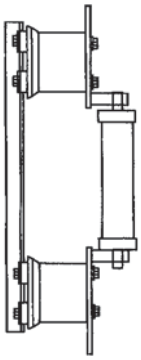
Fuse Type/Voltage	Interrupting Rating rms (kA Sym.)	Application Data (Time Current Curves)	Approximate Ship Wt. Lbs (kg)	Catalog Number
Type DSL fuse units 600V nominal	200	33–792 (2)	3.00 (1.4)	**6DSL-A150**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A200**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A250**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A300**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A400**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A600**
	200	33–792 (2)	3.00 (1.4)	**6DSL-A800**
	200	33–792 (2)	4.00 (1.8)	**6DSL-B1200**
	200	33–792 (2)	4.00 (1.8)	**6DSL-B1600**
	200	33–792 (2)	4.00 (1.8)	**6DSL-B2000**
	200	33–792 (3)	5.50 (2.5)	**6DSL-C800**
	200	33–792 (3)	5.50 (2.5)	**6DSL-C1000**
	200	33–792 (3)	5.50 (2.5)	**6DSL-C1200**
	200	33–792 (3)	5.50 (2.5)	**6DSL-C1600**
	200	33–792 (3)	5.50 (2.5)	**6DSL-C2000**
	200	33–792 (3)	8.50 (3.9)	**6DSL-D2500**
	200	33–792 (3)	8.50 (3.9)	**6DSL-D3000**
	200	33–792	20.00 (9.1)	**6DSL-E2500**
	200	33–792	20.00 (9.1)	**6DSL-E3000**
	200	33–792	20.00 (9.1)	**6DSL-E4000**
	200	33–792	24.00 (10.9)	**6DSL-F5000**

Typical Fuse Mounting for Current Limiting Fuses

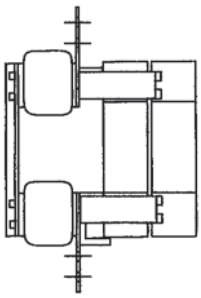
Single Barrel Disconnect with 2.00-Inch (50.8 mm) Diameter CLE Fuses



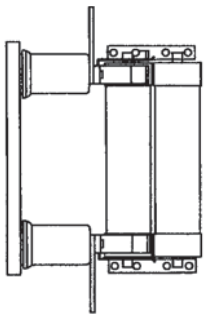
Non-Disconnect (CX)



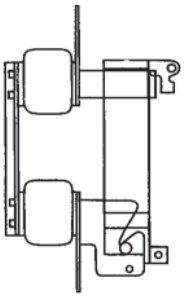
Double-Barrel Non-Disconnect All 2.00-Inch (50.8 mm) and 3.00-Inch (76.2 mm) Diameter CL Fuses



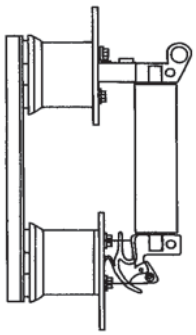
Non-Disconnect (15CXN-GNM-F and 15CXN-GNM-D)



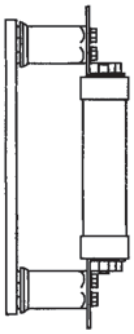
Single Barrel Disconnect All 3.00-Inch (76.2 mm) Diameter CLE Fuses



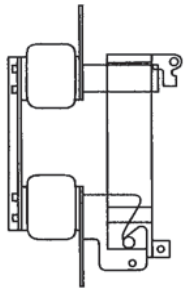
Disconnect (CX)



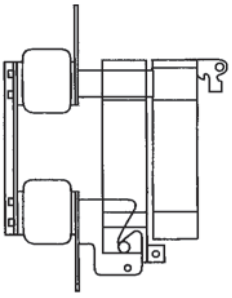
Non-Disconnect (15CXN-GNM-G)



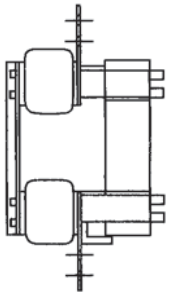
Disconnect (15CXN-GNM-F)



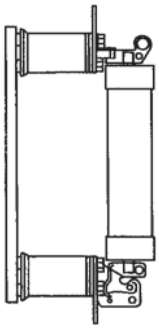
Double Barrel Disconnect All 3.00-Inch (76.2 mm) Diameter CLE Fuses



Single-Barrel Non-Disconnect All 2.00-Inch (50.8 mm) and 3.00-Inch (76.2 mm) Diameter CL Fuses

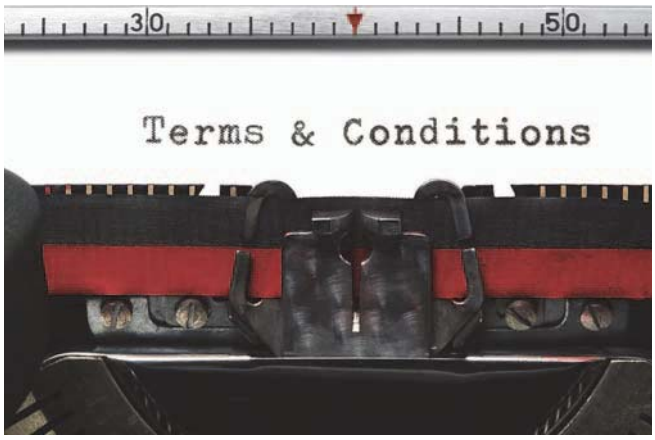


Disconnect (15CXN-GNM-G)



Effective Date: November 1, 2008

Eaton Terms & Conditions



Contents

Description	*Page*
Terms and Conditions of Sale	**V4-A1-1**
Terms of Payment	**V4-A1-2**
Freight	**V4-A1-3**
Warranty	**V4-A1-3**

Selling Policy (Supersedes Selling Policy 25-000, dated February 20, 2006)

Terms and Conditions of Sale

The Terms and Conditions of Sale set forth herein, and any supplements which may be attached hereto, constitute the full and final expression of the contract for the sale of products or services (hereinafter referred to as Product(s) or Services by Eaton Corporation (hereinafter referred to as Seller) to the Buyer, and supersedes all prior quotations, purchase orders, correspondence or communications whether written or oral between the Seller and the Buyer. Notwithstanding any contrary language in the Buyer's purchase order, correspondence or other form of acknowledgment, Buyer shall be bound by these Terms and Conditions of Sale when it sends a purchase order or otherwise indicates acceptance of this contract, or when it accepts delivery from Seller of the Products or Services.

THE CONTRACT FOR SALE OF THE PRODUCTS OR SERVICES IS EXPRESSLY LIMITED TO THE TERMS AND CONDITIONS OF SALE STATED HEREIN. ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER ARE REJECTED UNLESS EXPRESSLY AGREED TO IN WRITING BY SELLER. No contract shall exist except as herein provided.

Complete Agreement

No amendment or modification hereto nor any statement, representation or warranty not contained herein shall be binding on the Seller unless made in writing by an authorized representative of the Seller. Prior dealings, usage of the trade or a course of performance shall not be relevant to determine the meaning of this contract even though the accepting or acquiescing party had knowledge of the nature of the performance and opportunity for objection.

Quotations

Written quotations are valid for 30 days from its date unless otherwise stated in the quotation or terminated sooner by notice.

Verbal quotations, unless accepted, expire the same day they are made.

A complete signed order must be received by Seller within 20 calendar days of notification of award, otherwise the price and shipment will be subject to re-negotiation.

Termination and Cancellation

Any order may be terminated by the Buyer only by written notice and upon payment of reasonable termination charges, including all costs plus profit.

Seller shall have the right to cancel any order at any time by written notice if Buyer breaches any of the terms hereof, becomes the subject of any proceeding under state or federal law for the relief of debtors, or otherwise becomes insolvent or bankrupt, generally does not pay its debts as they become due or makes an assignment for the benefit of creditors.

Appendix 1—Eaton Terms & Conditions

Effective Date: November 1, 2008

Prices

All prices are subject to change without notice. In the event of a price change, the effective date of the change will be the date of the new price or discount sheet, letter or telegram. All quotations made or orders accepted after the effective date will be on the new basis. For existing orders, the price of the unshipped portion of an order will be the price in effect at time of shipment.

Price Policy—Products and Services

When prices are quoted as firm for quoted shipment, they are firm provided the following conditions are met:

1. The order is released with complete engineering details.
2. Shipment of Products are made, and Services purchased are provided within the quoted lead time.
3. When drawings for approval are required for any Products, the drawings applicable to those Products must be returned within 30* calendar days from the date of the original mailing of the drawings by Seller. The return drawings must be released for manufacture and shipment and must be marked "APPROVED" or "APPROVED AS NOTED." Drawing re-submittals which are required for any other reason than to correct Seller errors will not extend the 30-day period.

   * 60 days for orders through contractors to allow time for their review and approval before and after transmitting them to their customers.

If the Buyer initiates or in any way causes delays in shipment, provision of Services or return of approval drawings beyond the periods stated above, the price of the Products or Services will be increased 1% per month or fraction thereof up to a maximum of 18 months from the date of the Buyer's order. For delays resulting in shipment or provision of Services beyond 18 months from the date of the Buyer's order, the price must be renegotiated.

Price Policy—BLS

Refer to Price Policy 25-050.

Minimum Billing

Orders less than $1,000 will be assessed a shipping and handling charge of 5% of the price of the order, with a minimum charge of $25.00 unless noted differently on Product discount sheets.

Taxes

The price does not include any taxes. Buyer shall be responsible for the payment of all taxes applicable to, or arising from the transaction, the Products, its sale, value, or use, or any Services performed in connection therewith regardless of the person or entity actually taxed.

Terms of Payment

Products

Acceptance of all orders is subject to the Buyer meeting Seller's credit requirements. Terms of payment are subject to change for failure to meet such requirements. Seller reserves the right at any time to demand full or partial payment before proceeding with a contract of sale as a result of changes in the financial condition of the Buyer. Terms of Payment are either Net 30 days from the date of invoice of each shipment or carry a cash discount based on Product type. Specific payment terms for Products are outlined in the applicable Product discount schedules.

Services

Terms of payment are net within 30 days from date of invoice for orders amounting to less than $50,000.00.

Terms of payment for orders exceeding $50,000.00 shall be made according to the following:

1. Twenty percent (20%) of order value with the purchase order payable 30 days from date of invoice.
2. Eighty percent (80%) of order value in equal monthly payments over the performance period payable 30 days from date of invoice.

Except for work performed (i) under a firm fixed price basis or (ii) pursuant to terms of a previously priced existing contract between Seller and Buyer, invoices for work performed by Seller shall have added and noted on each invoice a charge of 3% (over and above the price of the work) which is related to Seller compliance with present and proposed environmental, health, and safety regulations associated with prescribed requirements covering hazardous materials management and employee training, communications, personal protective equipment, documentation and record keeping associated therewith.

Adequate Assurances

If, in the judgment of Seller, the financial condition of the Buyer, at any time during the period of the contract, does not justify the terms of payment specified, Seller may require full or partial payment in advance.

Delayed Payment

If payments are not made in accordance with these terms, a service charge will, without prejudice to the right of Seller to immediate payment, be added in an amount equal to the lower of 1.5% per month or fraction thereof or the highest legal rate on the unpaid balance.

Freight

Freight policy will be listed on the Product discount sheets, or at option of Seller one of the following freight terms will be quoted.

F.O.B.—P/S—Frt./Ppd. and Invoiced

Products are sold F.O.B. point of shipment freight prepaid and invoiced to the Buyer.

F.O.B.—P/S—Frt./Ppd. and Allowed

Products sold are delivered F.O.B. point of shipment, freight prepaid and included in the price.

F.O.B. Destination—Frt./Ppd. and Allowed

At Buyer's option, Seller will deliver the Products F.O.B. destination freight prepaid and 2% will be added to the net price.

The term "freight prepaid" means that freight charges will be prepaid to the accessible common carrier delivery point nearest the destination for shipments within the United States and Puerto Rico unless noted differently on the Product discount sheets. For any other destination contact Seller's representative.

Shipment and Routing

Seller shall select the point of origin of shipment, the method of transportation, the type of carrier equipment and the routing of the shipment.

If the Buyer specifies a special method of transportation, type of carrier equipment, routing, or delivery requirement, Buyer shall pay all special freight and handling charges.

When freight is included in the price, no allowance will be made in lieu of transportation if the Buyer accepts shipment at factory, warehouse, or freight station or otherwise supplies its own transportation.

Risk of Loss

Risk of loss or damage to the Products shall pass to Buyer at the F.O.B. point.

Concealed Damage

Except in the event of F.O.B. destination shipments, Seller will not participate in any settlement of claims for concealed damage.

When shipment has been made on an F.O.B. destination basis, the Buyer must unpack immediately and, if damage is discovered must:

1. Not move the Products from the point of examination.
2. Retain shipping container and packing material.
3. Notify the carrier in writing of any apparent damage.
4. Notify Seller representative within 72 hours of delivery.
5. Send Seller a copy of the carrier's inspection report.

Witness Tests/Customer Inspection

Standard factory tests may be witnessed by the Buyer at Seller's factory for an additional charge calculated at the rate of $2,500 per day (not to exceed eight (8) hours) per Product type. Buyer may final inspect Products at the Seller's factory for $500 per day per Product type.

Witness tests will add one (1) week to the scheduled shipping date. Seller will notify Buyer fourteen (14) calendar days prior to scheduled witness testing or inspection. In the event Buyer is unable to attend, the Parties shall mutually agree on a rescheduled date. However, Seller reserves the right to deem the witness tests waived with the right to ship and invoice Products.

Held Orders

For any order held, delayed or rescheduled at the request of the Buyer, Seller may, at its sole option (1) require payment to be based on any reasonable basis, including but not limited to the contract price, and any additional expenses, or cost resulting from such a delay; (2) store Products at the sole cost and risk of loss of the Buyer; and/or (3) charge to the Buyer those prices under the applicable price policy. Payment for such price, expenses and costs, in any such event, shall be due by Buyer within thirty (30) days from date of Seller's invoice. Any order so held delayed or rescheduled beyond six (6) months will be treated as a Buyer termination.

Drawing Approval

Seller will design the Products in line with, in Seller's judgment, good commercial practice. If at drawing approval Buyer makes changes outside of the design as covered in their specifications, Seller will then be paid reasonable charges and allowed a commensurate delay in shipping date based on the changes made.

Drawing Re-Submittal

When Seller agrees to do so in its quotation, Seller shall provide Buyer with the first set of factory customer approval drawing(s) at Seller's expense. The customer approval drawing(s) will be delivered at the quoted delivery date. If Buyer requests drawing changes or additions after the initial factory customer approval drawing(s) have been submitted by Seller, the Seller, at its option, may assess Buyer drawing charges. Factory customer approval drawing changes required due to misinterpretation by Seller will be at Seller's expense. Approval drawings generated by Bid Manager are excluded from this provision.

Warranty

Warranty for Products

Seller warrants that the Products manufactured by it will conform to Seller's applicable specifications and be free from failure due to defects in workmanship and material for one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

In the event any Product fails to comply with the foregoing warranty Seller will, at its option, either (a) repair or replace the defective Product, or defective part or component thereof, F.O.B. Seller's facility freight prepaid, or (b) credit Buyer for the purchase price of the Product. All warranty claims shall be made in writing.

Seller requires all non-conforming Products be returned at Seller's expense for evaluation unless specifically stated otherwise in writing by Seller.

This warranty does not cover failure or damage due to storage, installation, operation or maintenance not in conformance with Seller's recommendations and industry standard practice or due to accident, misuse, abuse or negligence. This warranty does not cover reimbursement for labor, gaining access, removal, installation, temporary power or any other expenses, which may be incurred in connection with repair or replacement.

This warranty does not apply to equipment not manufactured by Seller. Seller limits itself to extending the same warranty it receives from the supplier.

Effective Date: November 1, 2008

Extended Warranty for Products

If requested by the Buyer and specifically accepted in writing by Seller, the foregoing standard warranty for Products will be extended from the date of shipment for the period and price indicated below:

- 24 months—2% of Contract Price
- 30 months—3% of Contract Price
- 36 months—4% of Contract Price

Special Warranty (In and Out) for Products

If requested by the Buyer and specifically accepted in writing by Seller, Seller will, during the warranty period for Products, at an additional cost of 2% of the contract price, be responsible for the direct cost of:

1. Removing the Product from the installed location.
2. Transportation to the repair facility and return to the site.
3. Reinstallation on site.

The total liability of Seller for this Special Warranty for Products is limited to 50% of the contract price of the particular Product being repaired and excludes expenses for removing adjacent apparatus, walls, piping, structures, temporary service, etc.

Warranty for Services

Seller warrants that the Services performed by it hereunder will be performed in accordance with generally accepted professional standards.

The Services, which do not so conform, shall be corrected by Seller upon notification in writing by the Buyer within one (1) year after completion of the Services.

Unless otherwise agreed to in writing by Seller, Seller assumes no responsibility with respect to the suitability of the Buyer's, or its customer's, equipment or with respect to any latent defects in equipment not supplied by Seller. This warranty does not cover damage to Buyer's, or its customer's, equipment, components or parts resulting in whole or in part from improper maintenance or operation or from their deteriorated condition. Buyer will, at its cost, provide Seller with unobstructed access to the defective Services, as well as adequate free working space in the immediate vicinity of the defective Services and such facilities and systems, including, without limitation, docks, cranes and utility disconnects and connects, as may be necessary in order that Seller may perform its warranty obligations. The conducting of any tests shall be mutually agreed upon and Seller shall be notified of, and may be present at, all tests that may be made.

Warranty for Power Systems Studies

Seller warrants that any power systems studies performed by it will conform to generally accepted professional standards. Any portion of the study, which does not so conform, shall be corrected by Seller upon notification in writing by the Buyer within six (6) months after completion of the study. All warranty work shall be performed in a single shift straight time basis Monday through Friday. In the event that the study requires correction of warranty items on an overtime schedule, the premium portion of such overtime shall be for the Buyer's account.

Limitation on Warranties for Products, Services and Power Systems Studies

THE FOREGOING WARRANTIES ARE EXCLUSIVE EXCEPT FOR WARRANTY OF TITLE. SELLER DISCLAIMS ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE SELLER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY FOR FAILURE OF SELLER TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE BUYER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE.

Asbestos

Federal Law requires that building or facility owners identify the presence, location and quantity of asbestos containing material (hereinafter "ACM") at work sites. Seller is not licensed to abate ACM. Accordingly, for any contract which includes the provision of Services, prior to (i) commencement of work at any site under a specific Purchase Order, (ii) a change in the work scope of any Purchase Order, the Buyer will certify that the work area associated with the Seller's scope of work includes the handling of Class II ACM, including but not limited to generator wedges and high temperature gaskets which include asbestos materials. The Buyer shall, at its expense, conduct abatement should the removal, handling, modification or reinstallation, or some or all of them, of said Class II ACM be likely to generate airborne asbestos fibers; and should such abatement affect the cost of or time of performance of the work then Seller shall be entitled to an equitable adjustment in the schedule, price and other pertinent affected provisions of the contract.

Compliance with Nuclear Regulation

Seller's Products are sold as commercial grade Products not intended for application in facilities or activities licensed by the United States Nuclear Regulatory Commission for atomic purposes. Further certification will be required for use of the Products in any safety-related application in any nuclear facility licensed by the U.S. Nuclear Regulatory Commission.

Returning Products

Authorization and shipping instructions for the return of any Products must be obtained from Seller before returning the Products.

When return is occasioned due to Seller error, full credit including all transportation charges will be allowed.

Product Notices

Buyer shall provide the user (including its employees) of the Products with all Seller supplied Product notices, warnings, instructions, recommendations, and similar materials.

Force Majeure

Seller shall not be liable for failure to perform or delay in performance due to fire, flood, strike or other labor difficulty, act of God, act of any governmental authority or of the Buyer, riot, embargo, fuel or energy shortage, car shortage, wrecks or delays in transportation, or due to any other cause beyond Seller's reasonable control. In the event of delay in performance due to any such cause, the date of delivery or time for completion will be extended by a period of time reasonably necessary to overcome the effect of such delay.

Liquidated Damages

Contracts which include liquidated damage clauses for failure to meet shipping or job completion promises are not acceptable or binding on Seller, unless such clauses are specifically accepted in writing by an authorized representative of the Seller at its headquarters office.

Patent Infringement

Seller will defend or, at its option, settle any suit or proceeding brought against Buyer, or Buyer's customers, to the extent it is based upon a claim that any Product or part thereof, manufactured by Seller or its subsidiaries and furnished hereunder, infringes any United States patent, other than a claim of infringement based upon use of a Product or part thereof in a process, provided Seller is notified in reasonable time and given authority, information and assistance (at Seller's expense) for the defense of same. Seller shall pay all legal and court costs and expenses and court-assessed damages awarded therein against Buyer resulting from or incident to such suit or proceeding. In addition to the foregoing, if at any time Seller determines there is a substantial question of infringement of any United States patent, and the use of such Product is or may be enjoined, Seller may, at its option and expense: either (a) procure for Buyer the right to continue using and selling the Product; (b) replace the Product with non-infringing apparatus; (c) modify the Product so it becomes non-infringing; or (d) as a last resort, remove the Product and refund the purchase price, equitably adjusted for use and obsolescence. In no case does Seller agree to pay any recovery based upon its Buyer's savings or profit through use of Seller's Products whether the use be special or ordinary. The foregoing states the entire liability of Seller for patent infringement.

The preceding paragraph does not apply to any claim of infringement based upon: (a) any modification made to a Product other than by Seller; (b) any design and/or specifications of Buyer to which a Product was manufactured; or (c) the use or combination of Product with other products where the Product does not itself infringe. As to the above-identified claim situations where the preceding paragraph does not apply, Buyer shall defend and hold Seller harmless in the same manner and to the extent as Seller's obligations described in the preceding paragraph. Buyer shall be responsible for obtaining (at Buyer's expense) all license rights required for Seller to be able to use software products in the possession of Buyer where such use is required in order to perform any Service for Buyer.

With respect to a Product or part thereof not manufactured by Seller or its subsidiaries, Seller will attempt to obtain for Buyer, from the supplier(s), the patent indemnification protection normally provided by the supplier(s) to customers.

Compliance with OSHA

Seller offers no warranty and makes no representation that its Products comply with the provisions or standards of the Occupational Safety and Health Act of 1970, or any regulation issued thereunder. In no event shall Seller be liable for any loss, damage, fines, penalty or expenses arising under said Act.

Limitation of Liability

THE REMEDIES OF THE BUYER SET FORTH IN THIS CONTRACT ARE EXCLUSIVE AND ARE ITS SOLE REMEDIES FOR ANY FAILURE OF SELLER TO COMPLY WITH ITS OBLIGATIONS HEREUNDER.

NOTWITHSTANDING ANY PROVISION IN THIS CONTRACT TO THE CONTRARY, IN NO EVENT SHALL SELLER BE LIABLE IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE FOR DAMAGE TO PROPERTY OR EQUIPMENT OTHER THAN PRODUCTS SOLD HEREUNDER, LOSS OF PROFITS OR REVENUE, LOSS OF USE OF PRODUCTS, COST OF

CAPITAL, CLAIMS OF CUSTOMERS OF THE BUYER OR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, REGARDLESS OF WHETHER SUCH POTENTIAL DAMAGES ARE FORESEEABLE OR IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THE TOTAL CUMULATIVE LIABILITY OF SELLER ARISING FROM OR RELATED TO THIS CONTRACT WHETHER THE CLAIMS ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, SHALL NOT EXCEED THE PRICE OF THE PRODUCT OR SERVICES ON WHICH SUCH LIABILITY IS BASED.

A

AAL V4-**T2**-274, V4-**T2**-360
AA1 . . . . . V4-**T2**-104, V4-**T2**-360
AA11 . . . . . V4-**T2**-275
AA21 . . . . . V4-**T2**-275
AA31 . . . . . V4-**T2**-275
ALM V4-**T2**-104, V4-**T2**-360, V4-**T2**-389
AUX V4-**T2**-104, V4-**T2**-360, V4-**T2**-389
A1L V4-**T2**-104, V4-**T2**-270, V4-**T2**-271, V4-**T2**-360, V4-**T2**-389
A1X V4-**T2**-104, V4-**T2**-272, V4-**T2**-273, V4-**T2**-340, V4-**T2**-360, V4-**T2**-389
A2L V4-**T2**-104, V4-**T2**-270, V4-**T2**-271, V4-**T2**-389
A2X V4-**T2**-104, V4-**T2**-272, V4-**T2**-273, V4-**T2**-340, V4-**T2**-360, V4-**T2**-389
A3X V4-**T2**-104, V4-**T2**-273
A4X V4-**T2**-104, V4-**T2**-273, V4-**T2**-389
A6LES V4-**T2**-182–V4-**T2**-184
A8ME V4-**T2**-209, V4-**T2**-210

B

BAB V4-**T1**-12, V4-**T1**-32, V4-**T1**-38, V4-**T1**-41–V4-**T1**-45
BBMK V4-**T2**-313
BB-UL V4-**T1**-76, V4-**T1**-77
BIM V4-**T2**-320
BMH V4-**T2**-65, V4-**T2**-306, V4-**T2**-329, V4-**T2**-359
BRR V4-**T1**-32
B20 . . . . . V4-**T2**-76
B201 . . . . . V4-**T2**-243, V4-**T2**-350
B25 . . . . . V4-**T2**-76
B250 . . . . . V4-**T2**-243, V4-**T2**-350
B300 . . . . . V4-**T2**-350

C

CFDPV V4-**T2**-358
CHK V4-**T2**-162
CHKD V4-**T2**-170, V4-**T2**-172
CHL V4-**T2**-184
CHLD V4-**T2**-193, V4-**T2**-196
CHMDL V4-**T2**-210
CHND V4-**T2**-221, V4-**T2**-223
CJGPVS V4-**T2**-357
CKD V4-**T2**-162, V4-**T2**-169, V4-**T2**-171
CKDPV V4-**T2**-358
CKDPVS V4-**T2**-357
CLD V4-**T2**-184, V4-**T2**-192, V4-**T2**-195
CLDC V4-**T2**-194, V4-**T2**-197
CLE V4-**T3**-101–V4-**T3**-107, V4-**T3**-118
CLGPV V4-**T2**-358
CLPT V4-**T3**-120–V4-**T3**-123
CLR V4-**T1**-32
CMDL V4-**T2**-210
CMDLPV V4-**T2**-358
CND V4-**T2**-221, V4-**T2**-223
CNDC V4-**T2**-222, V4-**T2**-224
CRD V4-**T2**-234, V4-**T2**-236, V4-**T2**-238, V4-**T2**-240, V4-**T2**-242
CTK V4-**T2**-102, V4-**T2**-311
CX V4-**T3**-124–V4-**T3**-127, V4-**T3**-130
CXN V4-**T3**-130
C361 . . . . . V4-**T2**-321

D

DBU V4-**T3**-93, V4-**T3**-94
DBU17 . . . . . V4-**T3**-92
DBU27 . . . . . V4-**T3**-93
DBU38 . . . . . V4-**T3**-94
DIG V4-**T2**-36
DIGI V4-**T2**-101, V4-**T2**-140, V4-**T2**-320
DK V4-**T2**-160, V4-**T2**-161
DOPT V4-**T2**-319

E

ED V4-**T2**-131
EDB V4-**T2**-132
EDC V4-**T2**-132
EDH V4-**T2**-131
EDS V4-**T2**-133
EEC V4-**T2**-25
EFH V4-**T2**-102
EFP V4-**T2**-102
EFR V4-**T2**-102
EFS V4-**T2**-102
EFT V4-**T2**-25, V4-**T2**-108
EF1 . . . . . V4-**T2**-25
EF3 . . . . . V4-**T2**-25
EGB V4-**T2**-17, V4-**T2**-22
EGC V4-**T2**-21, V4-**T2**-92
EGD V4-**T2**-25
EGE V4-**T2**-18, V4-**T2**-345
EGH V4-**T2**-20, V4-**T2**-23, V4-**T2**-345
EGK V4-**T2**-21
EGS V4-**T2**-19, V4-**T2**-22, V4-**T2**-345
EG3 . . . . . V4-**T2**-102
EG4 . . . . . V4-**T2**-102
EHD V4-**T2**-133, V4-**T2**-139
EIP V4-**T2**-25, V4-**T2**-92
ELC V4-**T2**-263
ELE V4-**T2**-88
ELJ V4-**T2**-88
ELL V4-**T2**-88
EOP V4-**T2**-102, V4-**T2**-313, V4-**T2**-314
EOP5 . . . . . V4-**T2**-314
E1X1 . . . . . V4-**T2**-272
E2 . . . . . V4-**T2**-371–V4-**T2**-386
E2X1 . . . . . V4-**T2**-272

F

FAZ-B V4-**T1**-51, V4-**T1**-69
FAZ-C V4-**T1**-52–V4-**T1**-54, V4-**T1**-69, V4-**T1**-70
FAZ-D V4-**T1**-53, V4-**T1**-71
FAZ-K V4-**T1**-72
FAZ-S V4-**T1**-73
FAZ-X V4-**T1**-75
FAZ-XAA V4-**T1**-55, V4-**T1**-75
FAZ-XUA V4-**T1**-75

FAZ-Z V4-**T1**-74
FCWT V4-**T2**-304
FD V4-**T2**-134, V4-**T2**-135, V4-**T2**-139
FDC V4-**T2**-137, V4-**T2**-138, V4-**T2**-265
FDE V4-**T2**-138
FDMP V4-**T2**-262
FDPV V4-**T2**-358
FD1 . . . . . V4-**T2**-135
FD2 . . . . . V4-**T2**-135
FD3 . . . . . V4-**T2**-135
FD4 . . . . . V4-**T2**-135
FG V4-**T2**-338
FJC V4-**T2**-41
FJI V4-**T2**-41
FJP V4-**T2**-102
FJR V4-**T2**-102
FJS V4-**T2**-102
FJT V4-**T2**-41, V4-**T2**-108
FJ3 . . . . . V4-**T2**-41, V4-**T2**-334
FJ4 . . . . . V4-**T2**-41
FPH V4-**T2**-331
FPS V4-**T2**-331

G

GBHS V4-**T1**-35
GCWT V4-**T2**-305
GD V4-**T2**-117, V4-**T2**-118
GDB V4-**T2**-118
GFAU V4-**T2**-319
GFMB V4-**T1**-38
GFR V4-**T2**-405, V4-**T2**-406
GHB V4-**T2**-121, V4-**T2**-123, V4-**T2**-128
GHBS V4-**T1**-35
GHC V4-**T2**-126–V4-**T2**-128
GHQ V4-**T1**-35, V4-**T2**-121
GKOA V4-**T2**-308
GMCP V4-**T2**-252
GMH V4-**T2**-253
GPHB V4-**T2**-309
GPS V4-**T2**-331
GTSK V4-**T2**-307

H

HBA V4-**T1**-13
HCL V4-**T3**-111
HEX V4-**T2**-56, V4-**T2**-65, V4-**T2**-76
HFD V4-**T2**-136, V4-**T2**-138, V4-**T2**-139, V4-**T2**-346
HFDMP V4-**T2**-262
HGHB V4-**T2**-121
HGHC V4-**T2**-126
HJD V4-**T2**-148, V4-**T2**-149, V4-**T2**-347
HKD V4-**T2**-157–V4-**T2**-158, V4-**T2**-159, V4-**T2**-161, V4-**T2**-164, V4-**T2**-167, V4-**T2**-348
HLD V4-**T2**-181–V4-**T2**-183, V4-**T2**-185, V4-**T2**-187, V4-**T2**-190, V4-**T2**-349
HLK V4-**T2**-102, V4-**T2**-310, V4-**T2**-387
HMCP V4-**T2**-81–V4-**T2**-83, V4-**T2**-254, V4-**T2**-255, V4-**T2**-257–V4-**T2**-260
HMCPS V4-**T2**-256
HMDL V4-**T2**-207–V4-**T2**-210, V4-**T2**-350
HND V4-**T2**-218, V4-**T2**-220, V4-**T2**-224
HQP V4-**T1**-6, V4-**T1**-41–V4-**T1**-45
HRG V4-**T2**-253

I

ICK V4-**T2**-288
INK V4-**T2**-340
IPB V4-**T2**-56, V4-**T2**-65, V4-**T2**-308, V4-**T2**-359
IS/SPE V4-**T1**-55, V4-**T1**-89, V4-**T1**-95

J

JD V4-**T2**-148, V4-**T2**-149
JDB V4-**T2**-149
JDC V4-**T2**-148, V4-**T2**-149
JFDN V4-**T2**-340
JG V4-**T2**-338
JGC V4-**T2**-33, V4-**T2**-35, V4-**T2**-38
JGE V4-**T2**-31, V4-**T2**-35, V4-**T2**-37, V4-**T2**-39, V4-**T2**-40, V4-**T2**-346
JGF V4-**T2**-36–V4-**T2**-38, V4-**T2**-40
JGH V4-**T2**-32, V4-**T2**-35, V4-**T2**-37, V4-**T2**-39, V4-**T2**-40, V4-**T2**-347
JGK V4-**T2**-34
JGMP V4-**T2**-85
JGPVS V4-**T2**-357
JGS V4-**T2**-31, V4-**T2**-35, V4-**T2**-37, V4-**T2**-39, V4-**T2**-40, V4-**T2**-347
JGU V4-**T2**-33, V4-**T2**-35, V4-**T2**-38
JGX V4-**T2**-34, V4-**T2**-35, V4-**T2**-38
JG3 . . . . . V4-**T2**-102, V4-**T2**-109
JG4 . . . . . V4-**T2**-102, V4-**T2**-109
JJDN V4-**T2**-340
JKDN V4-**T2**-340
JLDN V4-**T2**-340
JNDN V4-**T2**-340
JT V4-**T2**-148
JT2 . . . . . V4-**T2**-35
JT3 . . . . . V4-**T2**-35, V4-**T2**-36, V4-**T2**-346, V4-**T2**-347
JT4 . . . . . V4-**T2**-35, V4-**T2**-36

K

KCWT V4-**T2**-304
KD V4-**T2**-157–V4-**T2**-159, V4-**T2**-160, V4-**T2**-161, V4-**T2**-163, V4-**T2**-166
KDB V4-**T2**-159, V4-**T2**-161
KDC V4-**T2**-157–V4-**T2**-158, V4-**T2**-165, V4-**T2**-168
KDPV V4-**T2**-358
KDPVS V4-**T2**-357
KEM V4-**T2**-377, V4-**T2**-378
KES V4-**T2**-158, V4-**T2**-162
KG V4-**T2**-338
KPE V4-**T2**-334, V4-**T2**-361
KPEK V4-**T2**-303, V4-**T2**-387
KPEM V4-**T2**-387
KPR V4-**T2**-303
KPS V4-**T2**-332
KT V4-**T2**-157, V4-**T2**-348

KYK V4-**T2**-102, V4-**T2**-311

L

LBH V4-**T2**-102
LD V4-**T2**-181–V4-**T2**-183, V4-**T2**-185, V4-**T2**-186, V4-**T2**-189, V4-**T2**-191
LDB V4-**T2**-183, V4-**T2**-185
LDC V4-**T2**-183, V4-**T2**-188, V4-**T2**-191
LEM. V4-**T2**-382
LES V4-**T2**-182, V4-**T2**-184
LFD V4-**T2**-319
LG V4-**T2**-339
LGC V4-**T2**-48, V4-**T2**-49, V4-**T2**-52, V4-**T2**-55
LGE V4-**T2**-47, V4-**T2**-49, V4-**T2**-51, V4-**T2**-53–V4-**T2**-55, V4-**T2**-348
LGF V4-**T2**-50–V4-**T2**-52, V4-**T2**-54, V4-**T2**-55
LGH V4-**T2**-47, V4-**T2**-49, V4-**T2**-51, V4-**T2**-53–V4-**T2**-55, V4-**T2**-349
LGK V4-**T2**-49
LGMP V4-**T2**-85
LGPV V4-**T2**-358
LGS V4-**T2**-47, V4-**T2**-49, V4-**T2**-51, V4-**T2**-53, V4-**T2**-54, V4-**T2**-55, V4-**T2**-102, V4-**T2**-348
LGT V4-**T2**-56
LGU V4-**T2**-48, V4-**T2**-49, V4-**T2**-52, V4-**T2**-55
LGX V4-**T2**-48, V4-**T2**-49, V4-**T2**-52, V4-**T2**-55
LG3 . . . . . V4-**T2**-102, V4-**T2**-109
LG4 . . . . . V4-**T2**-102, V4-**T2**-109
LHH V4-**T2**-97
LKD V4-**T2**-102, V4-**T2**-309, V4-**T2**-359
LPH V4-**T2**-102, V4-**T2**-332, V4-**T2**-387
LPS V4-**T2**-332
LRC V4-**T2**-102
LST V4-**T2**-105, V4-**T2**-280
LT V4-**T2**-181, V4-**T2**-348, V4-**T2**-349
LTS V4-**T2**-56, V4-**T2**-108
LT3 . . . . . V4-**T2**-49, V4-**T2**-50, V4-**T2**-55, V4-**T2**-348, V4-**T2**-379
LT4 . . . . . V4-**T2**-49, V4-**T2**-50, V4-**T2**-348
L3R V4-**T2**-56, V4-**T2**-334, V4-**T2**-387
L4R V4-**T2**-56, V4-**T2**-361

M

MA V4-**T3**-13
MAA V4-**T2**-274
MA1 . . . . . V4-**T2**-270
MA2 . . . . . V4-**T2**-270
MB V4-**T3**-13
MD V4-**T3**-13
MDL V4-**T2**-207, V4-**T2**-209, V4-**T2**-210
MDLB V4-**T2**-208
MDLPV V4-**T2**-358
MEM V4-**T2**-384
MES V4-**T2**-209, V4-**T2**-210
MOP V4-**T2**-102, V4-**T2**-107, V4-**T2**-313
MPS V4-**T2**-332
MT. V4-**T2**-207, V4-**T2**-350
MTS. V4-**T2**-36, V4-**T2**-50, V4-**T2**-102
MUVH V4-**T2**-283

N

NB V4-**T2**-350
ND V4-**T2**-218, V4-**T2**-220, V4-**T2**-224
NDC V4-**T2**-219, V4-**T2**-220
NG V4-**T2**-339
NGC V4-**T2**-64
NGH V4-**T2**-64
NGS V4-**T2**-63
NG3 . . . . . V4-**T2**-109
NG4 . . . . . V4-**T2**-109
NHH V4-**T2**-97
NTS V4-**T2**-65
NTS3 . . . . . V4-**T2**-308

O

OPTIM V4-**T2**-320
ORPK V4-**T2**-163–V4-**T2**-172
ORPL V4-**T2**-186–V4-**T2**-197
ORPN. V4-**T2**-218–V4-**T2**-224
ORPR V4-**T2**-241, V4-**T2**-242

P

PAD V4-**T2**-102, V4-**T2**-108, V4-**T2**-314, V4-**T2**-315
PHB V4-**T2**-309
PHL V4-**T2**-309, V4-**T2**-310
PIIL. V4-**T2**-108
PLK V4-**T2**-102, V4-**T2**-310, V4-**T2**-359, V4-**T2**-387
PLN2 . . . . . V4-**T2**-304
PMP. V4-**T2**-314
PM3 . . . . . V4-**T2**-334
PRTB V4-**T2**-320

Q

QBAF V4-**T1**-15
QBCAF. V4-**T1**-15
QBGF V4-**T1**-18, V4-**T1**-19
QBH V4-**T1**-12, V4-**T1**-15
QC V4-**T1**-21, V4-**T1**-41–V4-**T1**-45
QCD V4-**T1**-23
QCF V4-**T1**-26, V4-**T1**-44
QCG V4-**T1**-29
QCH V4-**T1**-29
QCHW V4-**T1**-22
QCR V4-**T1**-25, V4-**T1**-27
QHCW V4-**T1**-22
QHCX. V4-**T1**-22
QHP V4-**T1**-7
QL V4-**T1**-43, V4-**T1**-45, V4-**T1**-46
QPGF V4-**T1**-9, V4-**T1**-10, V4-**T1**-18
QPH V4-**T1**-6
QPHG. V4-**T1**-9

R

RBA2 . . . . . V4-**T3**-80, V4-**T3**-83, V4-**T3**-86, V4-**T3**-89
RBA4 . . . . . V4-**T3**-81, V4-**T3**-82, V4-**T3**-84, V4-**T3**-85, V4-**T3**-87, V4-**T3**-88, V4-**T3**-90, V4-**T3**-91
RD V4-**T2**-233, V4-**T2**-235, V4-**T2**-237, V4-**T2**-239, V4-**T2**-241, V4-**T2**-242

RDB2 . . . . . V4-**T3**-80–V4-**T3**-89
RDB4 . . . . . V4-**T3**-81, V4-**T3**-84, V4-**T3**-87, V4-**T3**-90
RDB8 . . . . . V4-**T3**-82–V4-**T3**-91
RDC V4-**T2**-233, V4-**T2**-235, V4-**T2**-237, V4-**T2**-239, V4-**T2**-241
RFDN V4-**T2**-340
RG V4-**T2**-350
RGC V4-**T2**-73–V4-**T2**-75
RGH V4-**T2**-72, V4-**T2**-74, V4-**T2**-75
RGK V4-**T2**-73
RJDN V4-**T2**-340
RKDN V4-**T2**-340
RLDN V4-**T2**-340
RNDN V4-**T2**-340
RP6R V4-**T2**-74, V4-**T2**-75, V4-**T2**-233–V4-**T2**-240

S

SBK V4-**T2**-102, V4-**T2**-312
SFDN V4-**T2**-340
SJDN V4-**T2**-340
SKDN V4-**T2**-340
SLA V4-**T3**-60
SLBK V4-**T1**-32
SLDN V4-**T2**-340
SNDN V4-**T2**-340
SNT V4-**T2**-104, V4-**T2**-340
SNT1 . . . . . V4-**T2**-276, V4-**T2**-360, V4-**T2**-389
SNT2 . . . . . V4-**T2**-277, V4-**T2**-389
SNT3 . . . . . V4-**T2**-277, V4-**T2**-360, V4-**T2**-389
SNT4 . . . . . V4-**T2**-278, V4-**T2**-389
SNT5 . . . . . V4-**T2**-279, V4-**T2**-389
SNT6 . . . . . V4-**T2**-279, V4-**T2**-389
STK2 . . . . . V4-**T2**-319

T

TAD3 . . . . . V4-**T2**-304
TA1 . . . . . V4-**T2**-65, V4-**T2**-76
TA10 . . . . . V4-**T2**-225, V4-**T2**-340, V4-**T2**-350, V4-**T2**-396
TA12 . . . . . V4-**T2**-225, V4-**T2**-340, V4-**T2**-350, V4-**T2**-396
TA16 . . . . . V4-**T2**-243, V4-**T2**-387
TA2 . . . . . V4-**T2**-76, V4-**T2**-396
TA20 . . . . . V4-**T2**-243, V4-**T2**-387
TA25 . . . . . V4-**T2**-41, V4-**T2**-148–V4-**T2**-150, V4-**T2**-340
TA250 . . . . . V4-**T2**-94
TA3 . . . . . V4-**T2**-361
TA30 . . . . . V4-**T2**-157, V4-**T2**-173, V4-**T2**-348
TA35 . . . . . V4-**T2**-56, V4-**T2**-157, V4-**T2**-173, V4-**T2**-329, V4-**T2**-340, V4-**T2**-348, V4-**T2**-349
TA40 . . . . . V4-**T2**-396
TA45 . . . . . V4-**T2**-198
TA60 . . . . . V4-**T2**-181, V4-**T2**-182, V4-**T2**-184, V4-**T2**-198, V4-**T2**-304, V4-**T2**-329, V4-**T2**-349, V4-**T2**-396
TA7 . . . . . V4-**T2**-65, V4-**T2**-361
TA70 . . . . . V4-**T2**-207, V4-**T2**-208, V4-**T2**-211, V4-**T2**-225, V4-**T2**-340, V4-**T2**-350, V4-**T2**-387, V4-**T2**-396
TA8 . . . . . V4-**T2**-361
TA80 . . . . . V4-**T2**-207, V4-**T2**-208, V4-**T2**-211, V4-**T2**-350, V4-**T2**-387, V4-**T2**-396
TBRD V4-**T2**-288
TEC V4-**T2**-308
TRIP V4-**T2**-101, V4-**T2**-320
TS33 . . . . . V4-**T2**-308
TS34 . . . . . V4-**T2**-308
T10 . . . . . V4-**T2**-65
T100 . . . . . V4-**T2**-225, V4-**T2**-387, V4-**T2**-396
T12 . . . . . V4-**T2**-65, V4-**T2**-92
T120 . . . . . V4-**T2**-225, V4-**T2**-387, V4-**T2**-396
T16 . . . . . V4-**T2**-76, V4-**T2**-243
T225 . . . . . V4-**T2**-396
T250 . . . . . V4-**T2**-41, V4-**T2**-150, V4-**T2**-266, V4-**T2**-346, V4-**T2**-347, V4-**T2**-387
T30 . . . . . V4-**T2**-361
T300 . . . . . V4-**T2**-173, V4-**T2**-387
T35 . . . . . V4-**T2**-361
T350 . . . . . V4-**T2**-56, V4-**T2**-173, V4-**T2**-387, V4-**T2**-396
T401 . . . . . V4-**T2**-396
T600 . . . . . V4-**T2**-211, V4-**T2**-387, V4-**T2**-396
T602 . . . . . V4-**T2**-198, V4-**T2**-304, V4-**T2**-387
T70 . . . . . V4-**T2**-65
T700 . . . . . V4-**T2**-225, V4-**T2**-387
T800 . . . . . V4-**T2**-211, V4-**T2**-387, V4-**T2**-396

U

UVH V4-**T2**-105, V4-**T2**-283–V4-**T2**-287, V4-**T2**-360, V4-**T2**-388
UVM V4-**T2**-388
UVR V4-**T2**-105, V4-**T2**-360

W

WBL V4-**T2**-102, V4-**T2**-312

Z

Z-EB V4-**T1**-55
Z-EK V4-**T1**-55
ZGK V4-**T2**-288
ZGPK V4-**T2**-288
Z-NH V4-**T1**-55, V4-**T1**-89, V4-**T1**-95
Z-SV V4-**T1**-55
ZV-BS V4-**T1**-55

Numerics

05B7 . . . . . V4-**T2**-397
1223 . . . . . V4-**T2**-309
1225 . . . . . V4-**T2**-253, V4-**T2**-308
1227 . . . . . V4-**T2**-393, V4-**T2**-394
1228 . . . . . V4-**T2**-398
1229 . . . . . V4-**T2**-393, V4-**T2**-394
1231 . . . . . V4-**T2**-314
1234 . . . . . V4-**T2**-406
1241 . . . . . V4-**T2**-397
1253 . . . . . V4-**T2**-317
1255 . . . . . V4-**T2**-405
1256 . . . . . V4-**T2**-405
1257 . . . . . V4-**T2**-405
1260 . . . . . V4-**T2**-314
1261 . . . . . V4-**T2**-397
1262 . . . . . V4-**T2**-397

1264 . . . . . V4-**T2**-319, V4-**T2**-395
1266 . . . . . V4-**T2**-307
1283 . . . . . V4-**T2**-405
1288 . . . . . V4-**T2**-253, V4-**T2**-270, V4-**T2**-272, V4-**T2**-315
1290 . . . . . V4-**T2**-315
1291 . . . . . V4-**T2**-392, V4-**T2**-394
1294 . . . . . V4-**T2**-253, V4-**T2**-308
1373 . . . . . V4-**T2**-253, V4-**T2**-276, V4-**T2**-281
14RB V4-**T3**-80–V4-**T3**-85
1480 . . . . . V4-**T2**-314
1482 . . . . . V4-**T2**-273, V4-**T2**-274
15BH V4-**T3**-107
15BHLE V4-**T3**-107
15CL V4-**T3**-122
15CLE V4-**T3**-104
15CLE2 . . . . . V4-**T3**-104
15CLE3 . . . . . V4-**T3**-104
15CLPT V4-**T3**-122
15CX V4-**T3**-127, V4-**T3**-130
15CXI. V4-**T3**-127
15CXN V4-**T3**-128, V4-**T3**-129
15HCL V4-**T3**-111
15HLE V4-**T3**-107
15NC V4-**T3**-122
15RB V4-**T3**-80–V4-**T3**-85
15RBT V4-**T3**-83
15RD V4-**T3**-83–V4-**T3**-85
167 . . . . . V4-**T1**-88, V4-**T1**-94
176C V4-**T2**-314
179C V4-**T2**-405
2ACLS V4-**T3**-113
2BCLS V4-**T3**-113
2CLE V4-**T3**-101, V4-**T3**-118
2CLS V4-**T3**-113
2HCLS V4-**T3**-113
2NCL V4-**T3**-119
2TA4 . . . . . V4-**T2**-157, V4-**T2**-173, V4-**T2**-198
2TA6 . . . . . V4-**T2**-181, V4-**T2**-185, V4-**T2**-198, V4-**T2**-304
2T40 . . . . . V4-**T2**-173
207B V4-**T2**-308
208B V4-**T2**-308, V4-**T2**-317, V4-**T2**-318
24RB V4-**T3**-86
25CL V4-**T3**-123
25CXN V4-**T3**-129
25RB V4-**T3**-86–V4-**T3**-88
25RD V4-**T3**-86–V4-**T3**-88
2600 . . . . . V4-**T2**-317, V4-**T2**-395
2602 . . . . . V4-**T2**-395
2603 . . . . . V4-**T2**-395
2605 . . . . . V4-**T2**-398
2606 . . . . . V4-**T2**-398
2609 . . . . . V4-**T2**-392–V4-**T2**-395
2610 . . . . . V4-**T2**-395
2611 . . . . . V4-**T2**-395
2614 . . . . . V4-**T2**-315
3TA V4-**T2**-23–V4-**T2**-25, V4-**T2**-41, V4-**T2**-56, V4-**T2**-361
3TA1 . . . . . V4-**T2**-140, V4-**T2**-305
3TA2 . . . . . V4-**T2**-140, V4-**T2**-266, V4-**T2**-305, V4-**T2**-329, V4-**T2**-340
3TA4 . . . . . V4-**T2**-157, V4-**T2**-173, V4-**T2**-198, V4-**T2**-305, V4-**T2**-329, V4-**T2**-340, V4-**T2**-348, V4-**T2**-387
3TA5 . . . . . V4-**T2**-140
3TA6 . . . . . V4-**T2**-181, V4-**T2**-182, V4-**T2**-184, V4-**T2**-185, V4-**T2**-198, V4-**T2**-304, V4-**T2**-329, V4-**T2**-340, V4-**T2**-348, V4-**T2**-349, V4-**T2**-387
3T1. . . . . V4-**T2**-24
3T10. . . . . V4-**T2**-140, V4-**T2**-266, V4-**T2**-329, V4-**T2**-340, V4-**T2**-387
3T15. . . . . V4-**T2**-140, V4-**T2**-329, V4-**T2**-387
3T2. . . . . V4-**T2**-361
3T20. . . . . V4-**T2**-140, V4-**T2**-351
3T22. . . . . V4-**T2**-140
3T40. . . . . V4-**T2**-173, V4-**T2**-387
3T6. . . . . V4-**T2**-56
313C V4-**T2**-316
314C V4-**T2**-308, V4-**T2**-316, V4-**T2**-318, V4-**T2**-397
315C V4-**T2**-318
317B V4-**T3**-120
32B9 . . . . . V4-**T2**-316
373B V4-**T2**-316, V4-**T2**-397
374D V4-**T2**-316
38CL V4-**T3**-123
38RB V4-**T3**-86–V4-**T3**-91
38RD V4-**T3**-89–V4-**T3**-91
4ACLS V4-**T3**-114
4BCLS V4-**T3**-114
4CX V4-**T3**-124
4CXI V4-**T3**-124
4TA V4-**T2**-24, V4-**T2**-56, V4-**T2**-361
4TA4 . . . . . V4-**T2**-157, V4-**T2**-173, V4-**T2**-198
4TA6 . . . . . V4-**T2**-181, V4-**T2**-182, V4-**T2**-185, V4-**T2**-198, V4-**T2**-304
4T4. . . . . V4-**T2**-361
4T40. . . . . V4-**T2**-173
4T6. . . . . V4-**T2**-56, V4-**T2**-361
4210. . . . . V4-**T2**-307
4212. . . . . V4-**T2**-317
4218. . . . . V4-**T2**-306
451D V4-**T2**-316
456D V4-**T2**-316, V4-**T2**-397
4995. . . . . V4-**T2**-398
5ACLS V4-**T3**-114
5AHLE V4-**T3**-105
5BCLS V4-**T3**-114
5BHCL V4-**T3**-111
5BHLE V4-**T3**-105
5CLE V4-**T3**-102, V4-**T3**-118
5CLPT V4-**T3**-120
5CLS V4-**T3**-114, V4-**T3**-115
5CX V4-**T3**-124, V4-**T3**-125
5CXI V4-**T3**-125
5HCL V4-**T3**-111
5HCLS V4-**T3**-114
5HLE V4-**T3**-105, V4-**T3**-118
5LCL V4-**T3**-115
5NCLPT V4-**T3**-120

Appendix 2—Catalog Parent Number Index

5RBA V4-**T3**-80–V4-**T3**-82
5010 . . . . . V4-**T2**-316
504C V4-**T2**-315
505C V4-**T2**-318
506C V4-**T2**-314, V4-**T2**-315, V4-**T2**-318
507C V4-**T2**-314
510 . . . . . V4-**T2**-65
5108 . . . . . V4-**T2**-321
5652 . . . . . V4-**T2**-25, V4-**T2**-305
5672 . . . . . V4-**T2**-398
5685 . . . . . V4-**T2**-392–V4-**T2**-395
6DSL V4-**T3**-131
6LES V4-**T2**-182–V4-**T2**-184
623B V4-**T2**-316, V4-**T2**-397
624B V4-**T2**-253, V4-**T2**-305, V4-**T2**-306, V4-**T2**-317, V4-**T2**-318, V4-**T2**-396
625B V4-**T2**-307
656D V4-**T2**-397
6631 . . . . . V4-**T2**-307
6636 . . . . . V4-**T2**-315
6641 . . . . . V4-**T2**-307
6642 . . . . . V4-**T2**-316
673B V4-**T2**-317
7ACLS V4-**T3**-116
7BCLS V4-**T3**-115
7CLS V4-**T3**-115, V4-**T3**-116
752B V4-**T2**-406
8ACLS V4-**T3**-115
8AHLE V4-**T3**-106
8BHLE V4-**T3**-106
8CLE V4-**T3**-103, V4-**T3**-118
8CLP V4-**T3**-121
8CLPT V4-**T3**-121
8CLS V4-**T3**-115, V4-**T3**-116
8CX V4-**T3**-126, V4-**T3**-130
8CXI. V4-**T3**-126
8CXN V4-**T3**-128
8HLE V4-**T3**-106, V4-**T3**-118
8MES. V4-**T2**-209, V4-**T2**-210
8NCL V4-**T3**-121
8RBA V4-**T3**-80–V4-**T3**-82
8RBT V4-**T3**-80–V4-**T3**-82
8RDB V4-**T3**-80–V4-**T3**-82
8703 . . . . . V4-**T2**-305

A

Accessories
- Expulsion Fuses
  - End Fittings V4-**T3**-78
  - Live Parts V4-**T3**-78
  - Mountings V4-**T3**-78
- Industrial Circuit Breakers, QUICKLAG V4-**T1**-27
  - Dummy Breakers V4-**T1**-45
  - Factory Modifications V4-**T1**-46
  - Handle Locks V4-**T1**-43
  - Handle Tie V4-**T1**-45
  - Mounting Hardware V4-**T1**-44
  - Quick-Connect Terminals V4-**T1**-27
  - Ring or Spade Lug Terminals V4-**T1**-27
  - Spare Terminal Hardware Screws V4-**T1**-46
  - Standard Box Terminals V4-**T1**-27
- Medium Voltage Power Contactors
  - Mechanical Latch V4-**T3**-68, V4-**T3**-72
- Molded Case Circuit Breakers, Definite Purpose
  - Base Mounting Hardware V4-**T2**-329
  - End Cap Accessory Kit V4-**T2**-329
  - Line and Load Terminals V4-**T2**-329
- Molded Case Circuit Breakers, Series C, External
  - Auxiliary Power Module V4-**T2**-320
  - Base Mounting Hardware V4-**T2**-305
  - Base Mounting Plate V4-**T2**-308
  - Breaker Interface Module (BIM) V4-**T2**-320
  - Cause of Trip Display/Remote Mount Cause of Trip Display V4-**T2**-320
  - Cause of Trip LED Module V4-**T2**-320
  - Cylinder Lock V4-**T2**-310
  - Digitrip OPTIMizer V4-**T2**-320
  - DIN Rail Adapter V4-**T2**-308
  - Direct (Close-Coupled) Handle Mechanisms V4-**T2**-253
  - Electrical Operator V4-**T2**-313
  - Flex Shaft Accessories (F- through R-Frame) V4-**T2**-321
  - Ground Fault Alarm Unit V4-**T2**-319
  - Interphase Barriers V4-**T2**-308
  - IQ Energy Sentinel V4-**T2**-319
  - Key Interlock Kit V4-**T2**-311
  - Key Operated Attachment V4-**T2**-308
  - Lock Dog (Non-Padlockable) V4-**T2**-308
  - Non-Padlockable Handle Block V4-**T2**-309
  - Padlockable Handle V4-**T2**-309
  - Padlockable Handle Lock V4-**T2**-309
  - Padlockable Handle Lock Hasp V4-**T2**-310
  - Panelboard Connecting Straps V4-**T2**-317
  - Plug-In Adapters V4-**T2**-314
  - Potential Transformer Module V4-**T2**-319
  - Rear Connected Studs V4-**T2**-316
  - Series C Rotary Accessories V4-**T2**-321
  - Sliding Bar Interlock V4-**T2**-312
  - Snap-On Padlockable Handle Lock Hasp V4-**T2**-309
  - Solid-State (Electronic) Test Kit V4-**T2**-319
  - Terminal End Covers V4-**T2**-308
  - Terminal Shields V4-**T2**-307
  - Termination Hardware V4-**T2**-303
  - Type LFD Current Limiter V4-**T2**-319
  - Walking Beam Interlock V4-**T2**-312
- Molded Case Circuit Breakers, Series C, Internal
  - Alarm Switch V4-**T2**-270
  - Auxiliary/Alarm Switch Combination V4-**T2**-274
  - Shunt Trip V4-**T2**-276
  - Terminal Block V4-**T2**-288
  - Undervoltage Release Mechanism V4-**T2**-281–V4-**T2**-287
  - Zone Interlock Kits V4-**T2**-288
- Molded Case Circuit Breakers, Series G, External
  - Electrical Operator V4-**T2**-102
  - Handle Blocks V4-**T2**-102
  - Handle Lock Hasps V4-**T2**-102
  - Interlock Kits V4-**T2**-102
  - Plug-In Adapters V4-**T2**-102
  - Rear Connected Studs V4-**T2**-102
  - Test Kit V4-**T2**-102
- Molded Case Circuit Breakers, Series G, Internal
  - Alarm Lockout V4-**T2**-104
  - Auxiliary Switch V4-**T2**-104
  - Auxiliary Switch/Alarm Lockout V4-**T2**-104
  - Shunt Trip—Low Energy V4-**T2**-105
  - Shunt Trip—Standard V4-**T2**-104
  - Undervoltage Release Mechanism V4-**T2**-105
- Molded Case Circuit Breakers, Specialty Breakers, Add-On Ground Fault Protection
  - Ammeter Kit V4-**T2**-406
  - Face Plate V4-**T2**-406
  - Ground Fault Warning Indicator V4-**T2**-406
  - Test Panel V4-**T2**-406
- Molded Case Circuit Breakers, Specialty Breakers, Classic Mining Breakers
  - Line and Load Terminal Shields V4-**T2**-397
  - Rear Connected Studs V4-**T2**-397
  - Shunt Trip V4-**T2**-398
  - Undervoltage Release Mechanism V4-**T2**-398
- Molded Case Circuit Breakers, Specialty Breakers, Direct Current
  - Auxiliary Switch V4-**T2**-352
  - Shunt Trip V4-**T2**-352
  - Undervoltage Release Mechanism V4-**T2**-352
- Molded Case Circuit Breakers, Specialty Breakers, E^2 Mining Service
  - Alarm (Signal/Lockout Switch) V4-**T2**-389
  - Auxiliary Switch V4-**T2**-389
  - End Cap Terminals V4-**T2**-387
  - Line and Load Terminals V4-**T2**-387
  - Padlockable Handle Lock Hasp V4-**T2**-387
  - Shunt Trip V4-**T2**-389
  - Undervoltage Release Mechanism V4-**T2**-388
- Molded Case Circuit Breakers, Specialty Breakers, Engine Generator
  - Auxiliary Switch V4-**T2**-340
  - Neutral Kits V4-**T2**-340
  - Shunt Trip V4-**T2**-340
  - Standard Terminals V4-**T2**-340
- Molded Case Circuit Breakers, Specialty Breakers, PVGard Solar Photovoltaic
  - Alarm Switch V4-**T2**-360
  - Auxiliary and Alarm Combo V4-**T2**-360
  - Auxiliary Switch V4-**T2**-360
  - End Cap Kits V4-**T2**-361
  - Imperial Base Mounting Hardware V4-**T2**-359

Interphase Barrier V4-**T2**-359
Metric Base Mounting Hardware V4-**T2**-359
Non-Padlockable Handle Block V4-**T2**-359
Padlockable Handle Lock Hasp V4-**T2**-359
PVGard Solar Circuit Breaker Terminal V4-**T2**-361
Shunt Trip V4-**T2**-360
Undervoltage Release V4-**T2**-360
Power Circuit Breakers, Magnum V4-**T3**-27
Auxiliary Switch V4-**T3**-27
Bell Alarm/Overcurrent Trip Switch V4-**T3**-27
Key Off Lock Provisions V4-**T3**-27
Latch Check Switch V4-**T3**-27
Mechanical Operations Counter V4-**T3**-27
Mechanical Trip Indicator Flag V4-**T3**-27
Padlockable Pushbutton Cover V4-**T3**-27
Shunt Trip Device V4-**T3**-27
Spring Charge Motor V4-**T3**-27
Spring Release Device V4-**T3**-27
Undervoltage Release V4-**T3**-27
UL 1053 DIN Rail RCCB 208Y/120 Vac V4-**T1**-95
Contact V4-**T1**-95
Padlock Hasp V4-**T1**-95
Protective Accessories V4-**T1**-95
UL 1053 DIN Rail RCCB 480/277 Vac V4-**T1**-89
Contact V4-**T1**-89
Padlock Hasp V4-**T1**-89
Protective Accessories V4-**T1**-89
UL 1077 DIN Rail Supplementary Protectors, FAZ . . . V4-**T1**-75
Auxiliary Contact V4-**T1**-75
Busbar End Cap V4-**T1**-77
Busbar System V4-**T1**-76
Contact V4-**T1**-75
Protective Accessories V4-**T1**-77
Supply Terminals V4-**T1**-77
Voltage Trips V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ
Padlock Hasp V4-**T1**-77
Shunt Trip V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA . V4-**T1**-55
Auxiliary Contact V4-**T1**-55
Bus Connector V4-**T1**-55
Busbar V4-**T1**-55
Busbar Shroud V4-**T1**-55
Contact V4-**T1**-55
Extension Terminal V4-**T1**-55
Padlock Hasp V4-**T1**-55
Protective Accessories V4-**T1**-55
Shunt Trip V4-**T1**-55
Supply Terminals V4-**T1**-55
Voltage Trips V4-**T1**-55

Add-On Ground Fault Protection—Type GFR
Molded Case Circuit Breakers, Specialty V4-**T2**-404

Alarm (Signal/Lockout Switch)
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service
Accessories V4-**T2**-389

Alarm Lockout
Molded Case Circuit Breakers, Series G, Internal
Accessories V4-**T2**-104

Alarm Switch
Molded Case Circuit Breakers, Series C, Internal
Accessories V4-**T2**-270
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories V4-**T2**-360

Ammeter Kit
Molded Case Circuit Breakers, Add-On Ground Fault Protection
Accessories V4-**T2**-406

Auxiliary and Alarm Combo
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories V4-**T2**-360

Auxiliary Contact
UL 1077 DIN Rail Supplementary Protectors, FAZ
Accessories V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA
Accessories V4-**T1**-55

Auxiliary Power Module
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-320

Auxiliary Switch
Molded Case Circuit Breakers, Series C, Internal
Accessories V4-**T2**-272
Molded Case Circuit Breakers, Series G, Internal
Accessories V4-**T2**-104
Molded Case Circuit Breakers, Speciality Breakers, Direct Current
Accessories V4-**T2**-352
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service
Accessories V4-**T2**-389
Molded Case Circuit Breakers, Speciality Breakers, Engine Generator
Accessories V4-**T2**-340
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories V4-**T2**-360
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Auxiliary Switch and Alarm Switch Combination
Molded Case Circuit Breakers, Series C, Internal
Accessories V4-**T2**-274

Auxiliary Switch/Alarm Lockout
Molded Case Circuit Breakers, Series G, Internal
Accessories V4-**T2**-104

B

Base Mounting Hardware
Molded Case Circuit Breakers, Definite Purpose
Accessories V4-**T2**-329
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-305

Base Mounting Plate
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-308

Bell Alarm/Overcurrent Trip Switch
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Bolt-On, QUICKLAG
Industrial Circuit Breakers V4-**T1**-11, V4-**T1**-14, V4-**T1**-17

Breaker Interface Module (BIM)
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-320

Bus Connector
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55

Busbar
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55

Busbar End Cap
UL 1077 DIN Rail Supplementary Protectors, FAZ Accessories V4-**T1**-77

Busbar Shroud
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55

Busbar System
UL 1077 DIN Rail Supplementary Protectors, FAZ Accessories V4-**T1**-76

C

Cable-In/Cable-Out, QUICKLAG
Industrial Circuit Breakers V4-**T1**-20, V4-**T1**-24, V4-**T1**-28

Cause of Trip Display/Remote Mount Cause of Trip Display
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-320

Cause of Trip LED Module
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-320

Classic Mining Breakers
Molded Case Circuit Breakers, Specialty V4-**T2**-390

Contact
UL 1053 DIN Rail RCCB 208Y/120 Vac Accessories V4-**T1**-95
UL 1053 DIN Rail RCCB 480/277 Vac Accessories V4-**T1**-89
UL 1077 DIN Rail Supplementary Protectors, FAZ Accessories V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55

Current Limiting Circuit Breaker Module
Molded Case Circuit Breakers, Series C V4-**T2**-264
Molded Case Circuit Breakers, Series G V4-**T2**-91

Current Limiting Fuses
Power Breakers, Contactors & Fuses V4-**T3**-99–V4-**T3**-132
Type BHLE V4-**T3**-108
Type CLE V4-**T3**-101
Type CLPT V4-**T3**-119
Type CLS V4-**T3**-113
Type CX V4-**T3**-124
Type CXF V4-**T3**-130
Type CXN V4-**T3**-128
Type DSL V4-**T3**-131
Type HCL V4-**T3**-111
Type HLE V4-**T3**-105

Cylinder Lock
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-310

D

Definite Purpose Breakers
Molded Case Circuit Breakers V4-**T2**-326–V4-**T2**-332
GP-, FP-, KP-, LP-, MP-Frames V4-**T2**-326

Digitrip OPTIMizer
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-320

DIN Rail Adapter
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-308

Direct (Close-Coupled) Handle Mechanisms
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-253

Direct Current Circuit Breakers
Molded Case Circuit Breakers, Specialty V4-**T2**-342

Drawout Cassette
Molded Case Circuit Breakers, Series G V4-**T2**-109

Dummy Breakers
Industrial Circuit Breakers, QUICKLAG Accessories V4-**T1**-45

E

E^2 Mining Service Breakers
Molded Case Circuit Breakers, Specialty V4-**T2**-367

Eaton Terms & Conditions V4-**T1**-1
Freight V4-**T1**-3
Limitation of Liability V4-**T1**-5
Terms and Conditions of Sale V4-**T1**-1
Terms of Payment V4-**T1**-2
Warranty V4-**T1**-3

EG-Frame (15–125 Amperes)
Molded Case Circuit Breakers, Series G V4-**T2**-15

Electrical Operator
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-313
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102

End Cap Accessory Kit
Molded Case Circuit Breakers, Definite Purpose Accessories V4-**T2**-329

End Cap Terminals
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service Accessories V4-**T2**-387

End Fittings
Expulsion Fuses Accessories V4-**T3**-78

Endcap Kits
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers Accessories V4-**T2**-361

Engine Generator Circuit Breakers
Molded Case Circuit Breakers, Specialty V4-**T2**-336

Appendix 3—Alphabetical Product Index

Expulsion Fuses
Power Breakers, Contactors & Fuses V4-**T3**-78–V4-**T3**-98
Accessories V4-**T3**-78
Type DBU V4-**T3**-92
Type RBA and RDB V4-**T3**-80

Extension Terminal
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA
Accessories V4-**T1**-55

F

Face Plate
Molded Case Circuit Breakers, Add-On Ground Fault Protection
Accessories V4-**T2**-406

Factory Modifications
Industrial Circuit Breakers, QUICKLAG
Accessories V4-**T1**-46

FAZ
UL 1077 DIN Rail Supplementary Protectors
Miniature Circuit Breakers and Supplementary Protectors V4-**T1**-67–V4-**T1**-86

FAZ-NA
UL 489 DIN Rail Miniature Circuit Breakers
Miniature Circuit Breakers and Supplementary Protectors V4-**T1**-49–V4-**T1**-66

F-Frame (10–225 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-129

Flex Shaft Accessories (F- through R-Frame)
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-321

FP-Frame
Molded Case Circuit Breakers, Definite Purpose . . . V4-**T2**-326

Fuses
Current Limiting V4-**T3**-99–V4-**T3**-132
Expulsion V4-**T3**-78–V4-**T3**-80
General V4-**T3**-75

G

G-Frame (15–100 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-115

GP-Frame
Molded Case Circuit Breakers, Definite Purpose . . . V4-**T2**-326

Ground Fault (Earth Leakage) Modules
Molded Case Circuit Breakers, Series G V4-**T2**-87

Ground Fault Alarm Unit
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-319

Ground Fault Warning Indicator
Molded Case Circuit Breakers, Add-On Ground Fault Protection
Accessories V4-**T2**-406

H

Handle Blocks
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102

Handle Lock Hasp
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102

Handle Locks
Industrial Circuit Breakers, QUICKLAG
Accessories V4-**T1**-43

Handle Tie
Industrial Circuit Breakers, QUICKLAG
Accessories V4-**T1**-45

High Instantaneous Circuit Breaker
Molded Case Circuit Breakers, Series G V4-**T2**-96

I

Imperial Base Mounting Hardware
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories V4-**T2**-359

Industrial Circuit Breakers, QUICKLAG
Accessories V4-**T1**-27, V4-**T1**-43
Bolt-On V4-**T1**-11, V4-**T1**-14, V4-**T1**-17
Cable-In/Cable-Out V4-**T1**-20, V4-**T1**-24, V4-**T1**-28
International Rated V4-**T1**-37
Plug-On V4-**T1**-5–V4-**T1**-10
Solenoid-Operated V4-**T1**-31, V4-**T1**-34
Special Application Breakers V4-**T1**-40

Interlock Kits
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102

International Rated, QUICKLAG
Industrial Circuit Breakers V4-**T1**-37

Interphase Barriers
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-308
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories V4-**T2**-359

IQ Energy Sentinel
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-319

J

J-Frame (70–250 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-146

JG-Frame (63–250 Amperes)
Molded Case Circuit Breakers, Series G V4-**T2**-29

K

Key Interlock Kit
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-311

Key Off Lock Provisions
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Key Operated Attachment
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-308

K-Frame (70–400 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-154

KP-Frame
Molded Case Circuit Breakers, Definite Purpose . . . V4-**T2**-326

L

Latch Check Switch
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

L-Frame (125–600 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-179

LG-Frame (250–630 Amperes)
Molded Case Circuit Breakers, Series G V4-**T2**-45

Line and Load Terminal Shields
Molded Case Circuit Breakers, Speciality Breakers, Classic Mining Service
Accessories V4-**T2**-397

Line and Load Terminals
Molded Case Circuit Breakers, Definite Purpose
Accessories V4-**T2**-329
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service
Accessories V4-**T2**-387

Live Parts
Expulsion Fuses
Accessories V4-**T3**-78

Lock Dog (Non-Padlockable)
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-308

LP-Frame
Molded Case Circuit Breakers, Definite Purpose . . . V4-**T2**-326

M

Magnum DC (Direct Current) Low Voltage Switches
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-30

Magnum DS Low Voltage Power Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-6

Magnum IEC Rated Air Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-20

Magnum MDSL Current Limiting Power Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-12

Magnum SB Low Voltage Insulated Case Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-15

Mechanical Latch
Medium Voltage Power Contactors
Accessories V4-**T3**-68

Mechanical Operations Counter
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Mechanical Trip Indicator Flag
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Medium Voltage Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-39

Medium Voltage Power Contactors
Power Breakers, Contactors & Fuses
Accessories. V4-**T3**-68, V4-**T3**-72
SL MV Power Contactor V4-**T3**-58, V4-**T3**-67, V4-**T3**-71

Metering and Communications
Molded Case Circuit Breakers
PM3 Monitoring and Metering Module V4-**T2**-333

Metric Base Mounting Hardware
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories. V4-**T2**-359

M-Frame (300–800 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-205

Miniature Circuit Breakers and Supplementary Protectors V4-**T1**-1–V4-**T1**-98
Industrial Circuit Breakers
QUICKLAG V4-**T1**-2–V4-**T1**-48
UL 1077 DIN Rail Supplementary Protectors
FAZ V4-**T1**-67–V4-**T1**-86
UL 489 DIN Rail Miniature Circuit Breakers
FAZ-NA V4-**T1**-49–V4-**T1**-66

Molded Case Circuit Breakers V4-**T2**-1–V4-**T2**-366
Definite Purpose Breakers. V4-**T2**-326–V4-**T2**-332
Introduction V4-**T2**-2, V4-**T2**-3
Metering and Communications V4-**T2**-333–V4-**T2**-335
Series C V4-**T2**-110–V4-**T2**-325
Series G V4-**T2**-4–V4-**T2**-109
Specialty Breakers V4-**T2**-336–V4-**T2**-406

Motor Circuit Protectors
Molded Case Circuit Breakers, Series G V4-**T2**-80

Motor Circuit Protectors (MCP)
Molded Case Circuit Breakers, Series C V4-**T2**-250

Motor Operators
Molded Case Circuit Breakers, Series G V4-**T2**-106

Motor Protection Circuit Breakers
Molded Case Circuit Breakers, Series C V4-**T2**-261
Molded Case Circuit Breakers, Series G V4-**T2**-84

Mounting Hardware
Industrial Circuit Breakers, QUICKLAG
Accessories. V4-**T1**-44

Mountings
Expulsion Fuses
Accessories. V4-**T3**-78

MP-Frame
Molded Case Circuit Breakers, Definite Purpose . . . V4-**T2**-326

N

Neutral Kits
Molded Case Circuit Breakers, Speciality Breakers, Engine Generator
Accessories. V4-**T2**-340

N-Frame (400–1200 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-216

NG-Frame (320–1200 Amperes)
Molded Case Circuit Breakers, Series G V4-**T2**-61

Non-Padlockable Handle Block
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-309
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers Accessories V4-**T2**-359

P

Padlock Hasp
UL 1053 DIN Rail RCCB 208Y/120 Vac Accessories V4-**T1**-95
UL 1053 DIN Rail RCCB 480/277 Vac Accessories V4-**T1**-89
UL 489 DIN Rail Miniature Circuit Breakers, FAZ Accessories V4-**T1**-77
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55
Padlockable Handle
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-309
Padlockable Handle Lock
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-309
Padlockable Handle Lock Hasp
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-310
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service Accessories V4-**T2**-387
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers Accessories V4-**T2**-359
Padlockable Pushbutton Cover
Power Circuit Breakers, Magnum Accessories V4-**T3**-27
Panelboard Connecting Straps
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-317
Plug-In Adapters
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-314
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102
Plug-In Blocks
Molded Case Circuit Breakers, Series G V4-**T2**-108
Plug-On, QUICKLAG
Industrial Circuit Breakers V4-**T1**-5–V4-**T1**-10
PM3 Monitoring and Metering Module
Molded Case Circuit Breakers, Metering and Communications V4-**T2**-333
Potential Transformer Module
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-319
Power Breakers, Contactors & Fuses V4-**T3**-1–V4-**T3**-132
Current Limiting Fuses V4-**T3**-99–V4-**T3**-132
Type BHLE V4-**T3**-108
Type CLE V4-**T3**-101
Type CLPT V4-**T3**-119
Type CLS V4-**T3**-113
Type CX V4-**T3**-124
Type CXF V4-**T3**-130
Type CXN V4-**T3**-128
Type DSL V4-**T3**-131
Type HCL V4-**T3**-111
Type HLE V4-**T3**-105
Expulsion Fuses V4-**T3**-78–V4-**T3**-98
Accessories V4-**T3**-78
Type DBU V4-**T3**-92
Type RBA and RDB V4-**T3**-80
Fuses V4-**T3**-75–V4-**T3**-77
Medium Voltage Power Contactors V4-**T3**-56–V4-**T3**-74
Accessories V4-**T3**-68, V4-**T3**-72
SL MV Power Contactor V4-**T3**-58, V4-**T3**-67, V4-**T3**-71
Power Circuit Breakers V4-**T3**-2–V4-**T3**-55
Low Voltage Power Circuit Breakers V4-**T3**-2
Magnum DC (Direct Current) Low Voltage Switches V4-**T3**-30
Magnum DS Low Voltage Power Circuit Breakers . . . V4-**T3**-6
Magnum IEC Rated Air Circuit Breakers V4-**T3**-20
Magnum MDSL Current Limiting Power Circuit Breakers V4-**T3**-12
Magnum SB Low Voltage Insulated Case Circuit Breakers V4-**T3**-15
Medium Voltage Circuit Breakers V4-**T3**-39
Series NRX Low Voltage Power Circuit Breakers . . . V4-**T3**-32
Power Circuit Breakers, Magnum Accessories V4-**T3**-27
Power Circuit Breakers
Power Breakers, Contactors & Fuses
Low Voltage Power Circuit Breakers V4-**T3**-2
Magnum DC (Direct Current) Low Voltage Switches V4-**T3**-30
Magnum DS Low Voltage Power Circuit Breakers . . . V4-**T3**-6
Magnum IEC Rated Air Circuit Breakers V4-**T3**-20
Magnum MDSL Current Limiting Power Circuit Breakers V4-**T3**-12
Magnum SB Low Voltage Insulated Case Circuit Breakers V4-**T3**-15
Medium Voltage Circuit Breakers V4-**T3**-39
Series NRX Low Voltage Power Circuit Breakers . . . V4-**T3**-32
Protective Accessories
UL 1053 DIN Rail RCCB 208Y/120 Vac Accessories V4-**T1**-95
UL 1053 DIN Rail RCCB 480/277 Vac Accessories V4-**T1**-89
UL 1077 DIN Rail Supplementary Protectors, FAZ Accessories V4-**T1**-77
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55
PVGard Solar Circuit Breaker Terminal
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers Accessories V4-**T2**-361
PVGard Solar Circuit Breakers
Molded Case Circuit Breakers, Specialty V4-**T2**-355

Q

Quick-Connect Terminals
Industrial Circuit Breakers, QUICKLAG Accessories V4-**T1**-27

QUICKLAG
Industrial Circuit Breakers V4-**T1**-2–V4-**T1**-48
Accessories V4-**T1**-27, V4-**T1**-43
Bolt-On V4-**T1**-11, V4-**T1**-14, V4-**T1**-17
Cable-In/Cable-Out V4-**T1**-20, V4-**T1**-24, V4-**T1**-28
International Rated V4-**T1**-37
Plug-On V4-**T1**-5–V4-**T1**-10
Solenoid-Operated V4-**T1**-31, V4-**T1**-34
Special Application Breakers V4-**T1**-40

R

Rear Connected Studs
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-316
Molded Case Circuit Breakers, Series G, External Accessories V4-**T2**-102
Molded Case Circuit Breakers, Speciality Breakers, Classic Mining Service Accessories V4-**T2**-397
R-Frame (800–2500 Amperes)
Molded Case Circuit Breakers, Series C V4-**T2**-231
RG-Frame (800–2500 Amperes)
Molded Case Circuit Breakers, Series G V4-**T2**-70
Ring or Spade Lug Terminals
Industrial Circuit Breakers, QUICKLAG Accessories V4-**T1**-27

S

Series C
Molded Case Circuit Breakers V4-**T2**-110–V4-**T2**-325
Current Limiting Circuit Breaker Module V4-**T2**-264
External Accessories V4-**T2**-299
F-Frame (10–225 Amperes) V4-**T2**-129
G-Frame (15–100 Amperes) V4-**T2**-115
Internal Accessories V4-**T2**-268
J-Frame (70–250 Amperes) V4-**T2**-146
K-Frame (70–400 Amperes) V4-**T2**-154
L-Frame (125–600 Amperes) V4-**T2**-179
M-Frame (300–800 Amperes) V4-**T2**-205
Motor Circuit Protectors (MCP) V4-**T2**-250
Motor Protection Circuit Breakers V4-**T2**-261
N-Frame (400–1200 Amperes) V4-**T2**-216
R-Frame (800–2500 Amperes) V4-**T2**-231
Type ELC Current Limiter Attachment V4-**T2**-263
Series C Rotary Accessories
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-321
Series G
Molded Case Circuit Breakers V4-**T2**-4–V4-**T2**-109
Current Limiting Circuit Breaker Module V4-**T2**-91
Drawout Cassette V4-**T2**-109
EG-Frame (15–125 Amperes) V4-**T2**-15
Ground Fault (Earth Leakage) Modules V4-**T2**-87
High Instantaneous Circuit Breaker V4-**T2**-96
JG-Frame (63–250 Amperes) V4-**T2**-29
LG-Frame (250–630 Amperes) V4-**T2**-45
Motor Circuit Protectors V4-**T2**-80
Motor Operators V4-**T2**-106
Motor Protection Circuit Breaker V4-**T2**-84
NG-Frame (320–1200 Amperes) V4-**T2**-61
Plug-In Blocks V4-**T2**-108
RG-Frame (800–2500 Amperes) V4-**T2**-70
Special Features and Accessories V4-**T2**-99
Series NRX Low Voltage Power Circuit Breakers
Power Circuit Breakers
Power Breakers, Contactors & Fuses V4-**T3**-32
Shunt Trip
Molded Case Circuit Breakers, Series C, Internal Accessories V4-**T2**-276
Molded Case Circuit Breakers, Speciality Breakers, Classic Mining Service Accessories V4-**T2**-398
Molded Case Circuit Breakers, Speciality Breakers, Direct Current Accessories V4-**T2**-352
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service Accessories V4-**T2**-389
Molded Case Circuit Breakers, Speciality Breakers, Engine Generator Accessories V4-**T2**-340
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers Accessories V4-**T2**-360
UL 489 DIN Rail Miniature Circuit Breakers, FAZ Accessories V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55
Shunt Trip Device
Power Circuit Breakers, Magnum Accessories V4-**T3**-27
Shunt Trip—Low Energy
Molded Case Circuit Breakers, Series G, Internal Accessories V4-**T2**-105
Shunt Trip—Standard
Molded Case Circuit Breakers, Series G, Internal Accessories V4-**T2**-104
SL MV Power Contactor
Medium Voltage Power Contactors
Power Breakers, Contactors & Fuses V4-**T3**-58, V4-**T3**-67, V4-**T3**-71
Sliding Bar Interlock
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-312
Snap-On Padlockable Handle Lock Hasp
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-309
Solenoid-Operated, QUICKLAG
Industrial Circuit Breakers V4-**T1**-31, V4-**T1**-34
Solid-State (Electronic) Portable Test Kit
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-319
Spare Terminal Hardware Screws
Industrial Circuit Breakers, QUICKLAG Accessories V4-**T1**-46
Special Application Breakers, QUICKLAG
Industrial Circuit Breakers V4-**T1**-40

Appendix 3—Alphabetical Product Index

Specialty Breakers
Molded Case Circuit Breakers. V4-**T2**-336–V4-**T2**-406
Add-On Ground Fault Protection—Type GFR. V4-**T2**-404
Classic Mining Breakers V4-**T2**-390
Direct Current Circuit Breakers V4-**T2**-342
E^2 Mining Service Circuit Breakers. V4-**T2**-367
Engine Generator Circuit Breakers V4-**T2**-336
PVGard Solar Circuit Breakers V4-**T2**-355

Spring Charge Motor
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Spring Release Device
Power Circuit Breakers, Magnum
Accessories V4-**T3**-27

Standard Box Terminals
Industrial Circuit Breakers, QUICKLAG
Accessories V4-**T1**-27

Standard Terminals
Molded Case Circuit Breakers, Speciality Breakers, Engine Generator
Accessories V4-**T2**-340

Supplementary Protectors V4-**T1**-1–V4-**T1**-98

Supply Terminals
UL 1077 DIN Rail Supplementary Protectors, FAZ
Accessories V4-**T1**-77
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA
Accessories V4-**T1**-55

T

Terminal Block
Molded Case Circuit Breakers, Series C, Internal
Accessories V4-**T2**-288

Terminal End Covers
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-308

Terminal Shields
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-307

Termination Hardware
Molded Case Circuit Breakers, Series C, External
Accessories V4-**T2**-303

Test Kit
Molded Case Circuit Breakers, Series G, External
Accessories V4-**T2**-102

Test Panel
Molded Case Circuit Breakers, Add-On Ground Fault Protection
Accessories V4-**T2**-406

Type BHLE
Current Limiting Fuses
Power Breakers, Contactors & Fuses V4-**T3**-108

Type CLE
Current Limiting Fuses
Power Breakers, Contactors & Fuses V4-**T3**-101

Type CLPT
Current Limiting Fuses
Power Breakers, Contactors & Fuses V4-**T3**-119

Type CLS
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-113

Type CX
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-124

Type CXF
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-130

Type CXN
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-128

Type DBU
Expulsion Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-92

Type DSL
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-131

Type ELC Current Limiter Attachment
Molded Case Circuit Breakers, Series C V4-**T2**-263

Type HCL
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-111

Type HLE
Current Limiting Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-105

Type LFD Current Limiter
Molded Case Circuit Breakers, Series C, External
Accessories. V4-**T2**-319

Type RBA and RDB
Expulsion Fuses
Power Breakers, Contactors & Fuses. V4-**T3**-80

U

UL 1053 DIN Rail RCCB 208Y/120 Vac
Accessories V4-**T1**-95
Miniature Circuit Breakers and Supplementary Protectors V4-**T1**-93–V4-**T1**-98

UL 1053 DIN Rail RCCB 480/277 Vac
Accessories V4-**T1**-89
Miniature Circuit Breakers and Supplementary Protectors V4-**T1**-87–V4-**T1**-92

UL 1077 DIN Rail Supplementary Protectors, FAZ
Accessories V4-**T1**-75

UL 489 DIN Rail Miniature Circuit Breakers
Miniature Circuit Breakers and Supplementary Protectors
FAZ V4-**T1**-67–V4-**T1**-86
FAZ-NA V4-**T1**-49–V4-**T1**-66

UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA
Accessories V4-**T1**-55

Undervoltage Release
Molded Case Circuit Breakers, Speciality Breakers, PVGard Solar Circuit Breakers
Accessories. V4-**T2**-360
Power Circuit Breakers, Magnum
Accessories. V4-**T3**-27

Undervoltage Release Mechanism
Molded Case Circuit Breakers, Series C, Internal Accessories V4-**T2**-281
Molded Case Circuit Breakers, Series G, Internal Accessories V4-**T2**-105
Molded Case Circuit Breakers, Speciality Breakers, Classic Mining Service Accessories V4-**T2**-398
Molded Case Circuit Breakers, Speciality Breakers, Direct Current Accessories V4-**T2**-352
Molded Case Circuit Breakers, Speciality Breakers, E^2 Mining Service Accessories V4-**T2**-388

V

Voltage Trips
UL 1077 DIN Rail Supplementary Protectors, FAZ Accessories V4-**T1**-75
UL 489 DIN Rail Miniature Circuit Breakers, FAZ-NA Accessories V4-**T1**-55

W

Walking Beam Interlock
Molded Case Circuit Breakers, Series C, External Accessories V4-**T2**-312

Z

Zone Interlock Kits
Molded Case Circuit Breakers, Series C, Internal Accessories V4-**T2**-288